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CATALOGUE
OF
HAVERFORD COLLEGE.



1887-88.

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Haverford College

CATALOGUE

OF

HAVERFORD COLLEGE

(HAVERFORD COLLEGE P. O., PA.)

1887-88.



Philadelphia:
PRESS OF FRIENDS' PRINTING HOUSE
SIXTH AND ARCH STREETS

24485

CALENDAR.

College Year* 1887-88 began,	9th Mo. 14
Winter Recess begins,	12th Mo. 23
Winter Term begins, 1888,*	1st Mo. 3
Mid-year Examinations begin,	1st Mo. 25
Second Half-year begins,	2d Mo. 1
Oration before the Loganian Society,	4th Mo. 9
Junior Exercises,	4th Mo. 13
Spring Recess begins,	4th Mo. 13
Spring Term begins,*	4th Mo. 23
Alumni Prize Oration,	5th Mo. 25
Alumni Meeting,	6th Mo. 25
Examinations for Admission, 9.30 A. M.,	6th Mo. 25
Address to the Graduating Class,	6th Mo. 26
Commencement Day, 1888,	6th Mo. 26

VACATION OF TWELVE WEEKS.

Examinations for Admission, 9.30 A. M.,†	9th Mo. 18
College Year 1888-89 begins,*	9th Mo. 19
Winter Recess begins,	12th Mo. 21
Winter Term begins, 1889,*	1st Mo. 3
Second Half-year begins,	2d Mo. 1
Spring Recess begins,	4th Mo. 12
Commencement Day, 1889,	6th Mo. 25
College Year, 1889-90, begins*	9th Mo. 18

* The first recitations are due, promptly at *half-past nine o'clock*, at the beginning of each Term. No absences from them are excused, unless clearly unavoidable.

† See also page 16.

CONTENTS.

Calendar,	2
History,	4
Corporation,	7
Faculty,	8
Seniors,	10
Juniors,	11
Sophomores,	12
Freshmen,	13
Summary,	13
Admission,	14
Expenses,	16
Courses of Instruction :	
Course in Arts and Science,	18
Scientific Course,	22
Engineering Course,	25
Lectures,	27
Voluntary Work,	27
Grading of Students,	27
Advanced Degrees,	28
Alumni Prize,	30
Library,	31
Museum,	31
Biological Library,	32
Chemical and Physical Laboratories,	32
Gymnasium,	32
Astronomical Observatory,	33
Department of Engineering,	34
Societies,	34
Degrees granted in 1887,	35
List of Alumni,	36
Honorary Degrees,	40

HISTORY.

IN the spring of 1830, a meeting of a few Friends in Philadelphia, shortly followed by a similar meeting in New York, originated Haverford School. The joint committee expressed the object of the effort as follows: "The members of the Society of Friends, having hitherto labored under great disadvantages in obtaining for their children a guarded education in the higher branches of learning, combining the requisite literary instruction with a religious care over the morals and manners of the scholars, . . . and carefully preserving them from the influence of corrupt principles and evil communications, it is therefore proposed that an institution be established, in which the children of Friends shall receive a liberal education in ancient and modern literature and the mathematical and other sciences."

The \$40,000 supposed to be necessary was raised without effort, and the committee went out to seek a location. They say: "We wished to procure a farm in a neighborhood of unquestioned salubrity—within a short distance of a Friends' meeting—of easy access from this city at all seasons of the year, . . . and that was recommended by the beauty of the scenery and retired situation." Then they go on to say, that of the many places presented to them the only one which combined all the advantages was one of 198½ acres (since increased to 215), "near the eight-mile stone on the Lancaster Turnpike." They explain the present and prospective merits of the farm, the beauty of the natural woods, the unfailing springs of purest water, the nearness to the new Pennsylvania Railroad, in words which the succeeding half-century has amply justified.

On the 28th of Tenth Month, 1833, the school opened with 21 students. Provision had been made for three teachers and a superintendent.

"A Teacher of Ancient Languages and Ancient Literature.

"A Teacher of English Literature and of Mental and Moral Philosophy.

"A Teacher of Mathematics and Natural Science."

The Superintendent was to have charge of the order and domestic economy of the family.

The regulations of the new school were rigid. The bounds and time of the boys were very strictly marked out. All the details of the daily programme were arranged with great care, and if the elaborate provision of a number of wise men for the normal growth of students could convert boys into perfect men, the students of Haverford of fifty years ago had every advantage.

The High School thus established grew rapidly into prosperity and debt. The charges were low, the teachers were liberally paid, and the years which followed were marked by a constant endeavor to produce a maximum of good fruits from very limited funds. The deficiencies were made up in a liberal spirit, and a constant growth maintained by frequent subscriptions. All the time the school was justifying the effort by the quality of its results, and making for itself an increasing number of friends.

One of the first acts of the committee, after the absolute necessities of the school were provided for, was to construct a gymnasium and make arrangements for systematical physical work. They were determined that the advantage gained by the salubrity of the surroundings should not be lost for want of exercise. Under their care, the lawn was graded at great expense, and foreign and native trees set out, with the design to make it a great arboretum. Cricket was introduced, a game not known elsewhere in America, and has always flourished since. A greenhouse and flower garden were established and maintained for twenty years by the work of the boys. The ideas that have done harm elsewhere, that schools were places for mental development only, had no foothold here, but morals, muscle and senses received their due share of culture.

In 1845 a temporary suspension was decreed, to allow the funds to accumulate and give time for the collection of an endowment, which suspension lasted for three years. In 1852 the observatory was built, and supplied with an 8-inch equatorial and 4-inch transit. In 1856 the school was changed to a college, and authorized by the Legislature to grant degrees, but previous to this time the course had been as extended as in many colleges. It was still hampered with a large preparatory department, which was not abolished till 1861. In 1863 Alumni Hall and Library were built. In 1876-7, Barclay Hall, containing private dormitories and study rooms, was erected, at a cost of \$82,000, which was collected by subscription. The Chemical Laboratories were perfected in 1878. The new Observatory was built in

1883, the Machine Shop established in 1884, and the Biological Laboratory in 1886.

During this time Haverford had developed into a fully organized college. Many rules, adapted to boys of a boarding school age, had been modified or abandoned, though enough of restraint was retained to provide against gross demoralization. The standard of admission was raised. Students of any denomination were admitted, though Friends still retained the general control. The number of teachers was increased six-fold. By various donations and bequests the endowment fund was greatly enlarged and all debts cleared away. The annual charge was increased from \$200 to \$500, which is still less than the college has to pay for professors' salaries and board and care of students. Retaining the old idea of a "guarded education" and "a religious care over morals and manners," the college has sought to effect these results, and has measurably succeeded, rather by appeals to Christian principle and manliness than by arbitrary power.

In Barclay Hall, the hall of residence, two students occupy a study-room, and each has his private adjoining bed-room. A few single rooms are also provided. Recitation rooms, laboratories, and dining room are in Founders' Hall. The library and observatory are in separate buildings near by. Some of the professors live in the halls with the students and others have cottages on the grounds.

The college has a remarkably pleasant and healthful location in the township of Haverford, Delaware County,* Pa., nine miles west of Philadelphia, on the Pennsylvania Railroad. The buildings are surrounded by grounds of about sixty acres, tastefully laid out and adorned with well-kept lawns, and a great variety of trees and shrubbery. These grounds comprise excellent fields for cricket, baseball, foot-ball, tennis and other field games, and a pond for skating.

The courses of study are designed to give a liberal education. Their scope will be seen on the following pages. Religious instruction is carefully provided. In addition to the daily reading of the Holy Scriptures, recitations in the English or Greek New Testament are required of the student once a week. By exposition and collateral information the instructors endeavor to enforce the true meaning of the lessons. Haverford College desires to inculcate the simple truths of the Christian religion.

* Haverford College *Post-Office* is in Montgomery County.

CORPORATION.

President,

WISTAR MORRIS,

209 S. Third Street, Philadelphia.

Secretary,

ELLISTON P. MORRIS,

21 North Seventh Street, Philadelphia.

Treasurer,

ASA S. WING,

409 Chestnut Street, Philadelphia.

MANAGERS.

WISTAR MORRIS,
T. WISTAR BROWN,
JAMES WHITALL,
JAMES CAREY THOMAS,
PHILIP C. GARRETT,
RICHARD CADBURY,
DAVID SCULL,
RICHARD WOOD,
ROBERT B. HAINES,
FRANCIS T. KING,
WILLIAM R. THURSTON,
CHARLES HARTSHORNE,
JOHN B. GARRETT,

EDWARD BETTLE, JR.,
CHARLES ROBERTS,
FRANCIS WHITE,
BENJAMIN H. SHOEMAKER,
HOWARD COMFORT,
WILLIAM S. TAYLOR,
JUSTUS C. STRAWBRIDGE,
ASA S. WING,
ELLISTON P. MORRIS,
FRANCIS STOKES,
JAMES WOOD,
ABRAM F. HUSTON,
J. PRESTON THOMAS,

WILLIAM H. HAINES.

Secretary of the Board.

HOWARD COMFORT,

529 Arch Street, Philadelphia.

Executive Committee.

JAMES WHITALL,
DAVID SCULL,
EDWARD BETTLE, JR.,
RICHARD CADBURY,
PHILIP C. GARRETT,

CHARLES ROBERTS,
JOHN B. GARRETT,
JUSTUS C. STRAWBRIDGE.
HOWARD COMFORT,
ASA S. WING.

FACULTY.†

ISAAC SHARPLESS, SC.D., PRESIDENT,
And Professor of Mathematics and Astronomy.

ALLEN C. THOMAS, A.M., LIBRARIAN,
And Professor of History and Rhetoric.

LYMAN BEECHER HALL, PH.D.,
John Farnum Professor of Chemistry and Physics.

SETH K. GIFFORD, A.M.,
Professor of Greek and German.

JAMES RENDEL HARRIS, A.M.,
Professor of Bible Languages and Ecclesiastical History.

MYRON R. SANFORD, A.M., REGISTRAR,
And Professor of Latin.

LEVI T. EDWARDS, A.B.,
Professor of Engineering.

J. PLAYFAIR McMURRICH, PH. D.,
David Scull Professor of Biology.

*WILLIAM C. LADD, A.M.,
Professor of French.

*FRANCIS B. GUMMERE, PH.D.,
Professor of English.

*Absent for the year in Europe.

†Arranged primarily as Professors, Lecturers, Instructors, etc., secondarily in the order of appointment.

HAVERFORD COLLEGE.

9

ALBERT S. BOLLES, PH.D.,

Lecturer on Political Science.

WALTER A. FORD, M.D.,

Instructor in Physical Training and Director of the Gymnasium.

SAMUEL LEPOIDS, OFFICIER D'ACADÉMIE.

Instructor in French.

GEORGE H. MAKUEN, A.B.,

Instructor in Elocution.

ROBERT W. ROGERS, A.B.,

Instructor in Greek.

FRANCIS P. LEAVENWORTH, A.B.,

Director of the Observatory.

FRANK MORLEY, A.M.,

Instructor in Mathematics.

JOHN JONES, A.M.,

Instructor in Philosophy.

JONATHAN J. COMFORT, M.D.,

Secretary of the College.

ALBERT J. EDMUNDS,

Assistant in the Library.

SENIOR CLASS.

CLASSICAL SECTION.

COX, E. MORRIS,	McPherson, Cal.
ENGLAND, HOWELL STROUD,	Wilmington, Del.
ORBISON, THOMAS J.,	Bellefonte, Pa.
SLOCUM, ALLISON W.,	Dartmouth, Mass.
STUBBS, MARTIN BELL,	Philadelphia, Pa.
WOOD, CHARLES RANDOLPH,	Philadelphia, Pa.

SCIENTIFIC SECTION.

BATTEY, CHARLES HEATON,	Providence, R. I.
CLEMENT, ALLEN BALLINGER,	Camden, N. J.
CORBIT, JOHN COWGILL, JR.,	Odessa, Del.
LEEDS, MORRIS EVANS,	Philadelphia, Pa.
GUMMERE, HENRY VOLKMAR,	Philadelphia, Pa.
HARTSHORNE, FRANCIS COPE,	Merion, Pa.
HILLES, JOSEPH TATUM,	Wilmington, Del.
LEWIS, WILLIAM DRAPER,	Philadelphia, Pa.
ROBERTS, GEORGE BRINTON,	Bala, Pa.
SHARP, JOSEPH WEBSTER, JR.,	Berwyn, Pa.

ENGINEERING SECTION.

BEIDELMAN, LAWRENCE PETERSON,	Little Rock, Ark.
JOHNSON, JOSEPH ESREY, JR.,	Longdale, Va.
MORRIS, FREDERICK WISTAR, JR.,	Philadelphia, Pa.
MORRIS, RICHARD JONES,	Philadelphia, Pa.

COLLINS, FREDERIC, JR.,	Philadelphia, Pa.
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JUNIOR CLASS.

CLASSICAL SECTION.

BANES, ROBERT COLEMAN,	Philadelphia, Pa.
BRANSON, THOMAS FRANKLIN,	Moorestown, N. J.
BURR, CHARLES H., JR.,	Philadelphia, Pa.
EVANS, THOMAS,	Germantown, Pa.
FITE, WARNER HUTCHINSON,	Philadelphia, Pa.
HAUGHTON, VICTOR MELLET,	Bryn Mawr, Pa.
KIRKBRIDE, FRANKLIN BUTLER,	Philadelphia, Pa.
LEWIS, DANIEL CLARK,	Susp. Bridge, N. Y.
MORRIS, LAWRENCE JOHNSON,	Philadelphia, Pa.
OVERMAN, WILLIAM FRANKLIN,	Goldsboro, N. C.
PEIRSON, FRANK WARRINGTON,	Lockport, N. Y.
RAVENEL, SAMUEL PRIOLEAU, JR.,	Charleston, S. C.
READE, WALTER GEORGE,	Philadelphia, Pa.
SMITH, WALTER EMANUEL,	Philadelphia, Pa.
STEVENS, LINDLEY MURRAY,	East Farnham, Canada.
STOKES, JOHN STOGDELL,	Moorestown, N. J.
VAIL, FREDERICK NEILSON,	Los Angeles, Cal.
WOOD, GILBERT CONGDON,	New York, N. Y.

SCIENTIFIC SECTION.

DUNTON, WILLIAM RUSH,	Germantown, Pa.
EVANS, WILLIAM HENRY,	Col. Springs, Col.
GOODWIN, WARREN C.,	Greenwich, N. J.
LEEDS, ARTHUR NEWLIN,	Philadelphia, Pa.
REINHARDT, DAVID JONES,	Marlboro, Pa.
THOMPSON, FRANK EARLE,	Little Rock, Ark.

ENGINEERING SECTION.

MORRIS, HERBERT,	Germantown, Pa.
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SOPHOMORE CLASS.

CLASSICAL SECTION.

ANGELL, EDWARD M.,	South Glens Falls, N. Y.
AUCHINCLOSS, JAMES STUART,	Bryn Mawr, Pa.
AUDENRIED, WILLIAM GRATTAN,	Chestnut Hill, Pa.
BRINGHURST, HENRY RYAN, JR.,	Wilmington, Del.
DAVIES, GUY HULETT,	Towanda, Pa.
FOX, ROBERT EASTBURN,	Bryn Mawr, Pa.
GILBERT, HENRY LEE,	Philadelphia, Pa.
JANNEY, THOMAS S.,	Churchville, Md.
KIRKBRIDE, THOMAS STORY,	Philadelphia, Pa.
LONGSTRETH, EDWARD RHOADS,	Philadelphia, Pa.
STEERE, JONATHAN MOWRY,	Burrillville, R. I.

SCIENTIFIC SECTION.

BUTLER, GEORGE THOMAS,	West Chester, Pa.
CABO, ANGEL RODERIGUEZ	Las Palmas, Mexico.
COTTRELL, CHARLES THURSTON,	Jamestown, R. I.
DARLINGTON, PERCY SMEDLEY,	West Chester, Pa.
GUSS, JOHN NOBLE,	West Chester, Pa.
HALEY, EDWIN JAMES,	West Chester, Pa.

ENGINEERING SECTION.

COFFIN, THOMAS AMORY,	Phoenixville, Pa.
GUILFORD, WILLIAM MOORE, JR.,	Lebanon, Pa.
LEWIS, JOHN F. TAYLOR,	Broomall, Pa.
SIMPSON, WILLIAM PERCY,	Overbrook, Pa.
WALTON, ERNEST FOSTER,	New York, N. Y.

BAILY, HENRY PAUL,	Philadelphia, Pa.
DU BARRY, JOSEPH N., JR.,	Philadelphia, Pa.
SHAW, JAMES GEORGE, JR.,	Newcastle, Del.
VALENTINE, JOHN REED,	Philadelphia, Pa.

FRESHMAN CLASS.

CLASSICAL SECTION.

BLAIR, DAVID HUNT,	High Point, N. C.
CANBY, MARRIOTT,	Wilmington, Del.
CRAWFORD, JOHN YOCUM,	Bryn Mawr, Pa.
MITCHELL, JACOB THOMAS,	Bellefonte, Pa.
RHOADS, JOSEPH HOWARD,	Philadelphia, Pa.
VALENTINE, EDWARD ABRAM,	Bellefonte, Pa.

SCIENTIFIC SECTION.

FISCHER, WILLIAM G., JR.,	Philadelphia, Pa.
FULLER, GEORGE LLEWELLYN,	Catasauqua, Pa.
HANDY, WILLIAM WINDER,	Baltimore, Md.
HIBBERD, DILWORTH P.,	Malvern, Pa.
STRAWBRIDGE, ROBERT EARLY,	Germantown, Pa.
THOMAS, GEORGE,	Whitford, Pa.

ENGINEERING SECTION.

MEKEEL, DAVID LANE,	Underhill, N. Y.
VALENTINE, GEORGE,	Bellefonte, Pa.
WHITNEY, JOHN DRAYTON,	Bryn Mawr, Pa.

SUMMARY.

Seniors,	20
Juniors,	25
Sophomores,	22
Freshmen,	15
Special Students,	5
Total,	87

ADMISSION.

CANDIDATES for admission to the Freshman Class in the COURSE IN ARTS AND SCIENCE will be examined as to their proficiency in the following requisites:

GREEK.—Grammar, scanning of hexameter verse; Xenophon's *Anabasis*, three books; Homer's *Iliad*, two books; Jones' Greek Composition, twenty-five Exercises to be written with the accents.

LATIN.—*Cæsar*, Gallic War, Books I.–III.; *Vergil*, *Æneid*, Books I.–IV.; *Ovid*, *Metamorphoses*, 600 lines; *Cicero*, Four orations against Catiline, and the oration for the Poet Archias. General questions on grammar, prosody, history and mythology suggested by the text. Translation of easy prose from English into Latin. Harkness, Parts I. and II., or Jones' Exercises will indicate the amount necessary.

Note.—Equivalents will be accepted in Greek and Latin. Much importance will be attached to ability to read at sight matter not previously studied.

MATHEMATICS.—Arithmetic, including the Metric System; Algebra, through Radicals and Quadratic Equations of one unknown quantity; three books of Geometry.

ENGLISH.—Grammar and Composition; Greek, Roman, and United States History; Physical Geography; a short English Composition, correct in spelling, punctuation and expression will be required. In 1888 the subject will be drawn from Milton's *Comus*; Tennyson's *Elaine*; Irving's *Sketch Book*; and in 1890 from Carlyle's *Heroes and Hero-Worship*; Macaulay's *Essay on Warren Hastings*; Longfellow's *Golden Legend*.

MODERN LANGUAGES.—In place of the Greek the candidate may offer *both* German and French as follows:

German.—A thorough knowledge of the Grammar; ability to read at sight ordinary prose or poetry. The minimum amount to be read may be indicated by Whitney's German Reader, Boisen's German Prose, Schiller's "Wilhelm Tell," Goethe's "Iphigenie auf Tauris."

French.—A thorough knowledge of the Grammar ; ability to read at sight ordinary prose or poetry. Chardenel's First and Second French Courses will indicate a sufficient amount.

Candidates for admission to the Freshman Class in the SCIENTIFIC OR ENGINEERING COURSE will be examined as follows :

LATIN.—As above.

MATHEMATICS.—As above, with the addition of the Theory and the Use of Logarithms.

ENGLISH.—As above.

SCIENCE.—The elements of Physics and of Human Physiology.

MODERN LANGUAGES.—*Both* German and French as outlined above, may be substituted for the Latin of this course.

The certificates of principals of first-class schools will be accepted in place of our examinations, so far as they cover the ground. Such teachers must fill up blank forms furnished on application. Certificates of private tutors will not be accepted.

Students not candidates for a degree may, at the discretion of the Faculty, be admitted to pursue special courses, for proficiency in which, certificates may be granted ; but this permission will be given only to students of sufficient age, ability, and diligence to insure their success.

Candidates may be admitted to advanced Classes, if found on examination fully prepared for admission to the Freshman Class, and also on subsequent examination thoroughly fitted in all the regular studies of the Course up to the point at which they enter.

A rule of the Corporation directs that "the College shall be open for the admission of the sons of Friends, and of others who are willing that their children should be educated in conformity with the principles of our religious Society."

Each candidate must forward, together with his application, a certificate of good moral character from his last teacher ; and students from other colleges must present also certificates of honorable dismissal in good standing.

No student is admitted for a period less than a year.

APPLICATIONS FOR ADMISSION must be made to the President. Entry Blanks will be furnished on application. Rooms are assigned in the order in which these entry-blanks, properly filled up, are received at the President's office. Candidates will present themselves at Founders' Hall, for examination by the Faculty, *at 9.30 o'clock on the morning previous to Commencement day, or at 9.30 o'clock on the morning previous to the beginning of the College year.*

EXPENSES.

The price of Board and Tuition (together with fuel, lights, and all necessary furniture and service), is \$500.00 per annum, payable to the President, one-half at the beginning, and one half at the middle of the College year.

For day students who dine at the College, the annual charge is \$250.00, and for tuition alone \$150.00.

The College Laundry charges 75 cents per dozen for washing.

There is a telegraph office and an Adams Express office at the College Station, and there is a U. S. Money-order office at Bryn Mawr, Montgomery Co., Pa., one mile from the College.

For further information address the President, Haverford College P. O., Montgomery Co., Pa.

COURSES OF INSTRUCTION.

NOTE.—In the Course in Arts and Science Latin is required through three years and Mathematics through two. Should the student present Greek for admission, he is required to continue it for two years, and take German and French for one year. Should he present German and French for admission, he is required to continue them for two years and take Greek for one year. All these subjects may be continued as electives. Some election is allowed in the Junior year. The Senior year is largely elective.

In the Scientific Course, Latin is required one year (unless the student presents German and French for admission), and Mathematics three years. Particular attention is given to the Modern Languages and the Sciences throughout the course. The number of electives is the same as in the course in Arts and Science.

In the Engineering Course, the Freshman year is nearly the same as in the Scientific Course. After this there is divergence, the Engineering students taking more Mathematics, Mechanics, Shop Work, Field Work, and Drawing as required studies.

COURSE IN ARTS AND SCIENCE.

FRESHMAN CLASS.

1. *Scripture*. The Gospel according to John. One hour a week.
 2. *Mathematics*. Sharpless's Geometry; Wells's University Algebra. Four hours a week.
 3. *Greek*. (See note below.) Demosthenes, *Philippics*, or an equivalent; Herodotus, *Selections*; Homer *Selections*; Translations at sight; Sidgwick's Greek Composition. Three hours a week.
 4. *Latin*. Livy (Chase); The Odes and Epodes of Horace (Chase); Review of Latin Grammar; Translations at sight (Cicero, de Senectute and de Amicitia); Prose Composition. Four hours a week.
 5. *Rhetoric and English Composition*. Principles of Rhetoric (A. S. Hill); Composition.
 6. *History*. History of Greece; History of Rome; Greek and Roman Antiquities. Subjects 5 and 6, two hours a week.
 7. *Physiology and Descriptive Botany*. Two hours a week.
- NOTE.—Subjects 8 and 9 will be pursued instead of 3 by those presenting Modern Languages instead of Greek for admission.
8. *German*. Translations and exercises in writing German.
 9. *French*. Translations and conversations. Exercises in writing French.

SOPHOMORE CLASS.

1. *Scripture*. The New Testament, English and Greek (Westcott and Hort, or Tischendorf's 8th edition). One hour a week.
2. *Mathematics*. Wentworth's Plane and Spherical Trigonometry; Surveying, with Field Practice; Peck's Analytical Geometry. Three hours a week.
3. *Greek*. (See note below.) Homer continued; Plato, *Apology* and *Crito*, or *Phaedo*; Æschylus, *Prometheus*; Aristophanes, *Frogs*; Translations at sight. Sidgwick's Greek Composition. Three hours a week.
4. *Latin*. The Germania and Agricola of Tacitus; Selections from the Latin Poets; Cicero's Letters; Translations at sight (Cornelius Nepos). Prose Composition. Three hours a week.
5. *Ethics*. Dymond's Essays on Morality. Two hours a week the first half-year.

6. *English Literature.* History of English Literature. Themes. One hour a week.

7. *History.* English History. Two hours a week the second half-year.

8. *Physics.* Four hours a week the first half-year.

9. *Chemistry.* Four hours a week the second half-year.

NOTE.—Subjects 10 and 11 will be pursued instead of 3 by those presenting Modern Languages instead of Greek for admission to the Freshman Class.

10. *German.* Literature and writing German.

11. *French.* Literature and writing French.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture.* Greek Testament (Westcott and Hort, or Tischendorf's 8th edition). One hour a week.

*2. *Mathematics.* Analytical Geometry and Calculus. Three hours a week.

*3. *Greek.* (See 15 below). Thucydides, *Selections*; Sophocles, *Antigone*; Euripides, *Medea* and *Alceste*. Dictation exercises in writing Greek. Three hours a week.

4. *Latin.* Cicero's Tusculan Disputations and Somnium Scipionis (Chase); Pliny's Letters; Vergil's Bucolics; Terence (at sight); Extemporalia. Voluntary Work in Roman Antiquities, Art, and the History of Literature. Two hours a week.

5. *German.* Joynes-Meissner's Grammar; Niebuhr's Heroengeschichten; Boisen's Prose Extracts; Translations at sight, and oral exercises. Two hours a week.

6. *French.* (For those who have not studied the language). Chardenal's First French Course; Translations, Exercises, and Conversations. Two hours a week.

7. *Geology.* Two hours a week the first half-year.

8. *Astronomy.* Descriptive Astronomy. Two hours a week the second half-year.

9. *Rhetoric and English Composition.* Themes; Forensics.

10. *Political Science.* Political Economy. Constitution of the United States. Subjects 9 and 10, two hours a week.

11. *History.* Mediæval and Modern History.

12. *Logic.* Whately and Hamilton; or Jevons.

13. *Psychology.* Mental Philosophy. Subjects 12 and 13, two hours a week

14. *Elocution.* Rehearsals for Public Exercises. Lectures.

15. *Modern Languages.* Instead of 3, students who have pursued German and French will use text-books in these languages in studying other branches. Election will be allowed between this course and 2.

* Election will be allowed between subjects 2 and 3.

ELECTIVE STUDIES.

1. *Descriptive Geometry, Shades and Shadows, and Perspective.* Two hours a week.
2. *Chemistry.* Qualitative Analysis; Laboratory Practice. Twice a week, counting as two hours of recitation.
3. *Shop-work and Mechanical Drawing.* Twice a week, counting as two hours.
4. *Hebrew.* Grammar; Exercises; Translations from the Old Testament. Two hours a week.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scripture.* Greek Testament continued. One hour a week.
2. *Political Science.* Political Economy; International Law (Lectures).
3. *English.* Philological Study; Themes and Forensics.
4. *History.* Constitutional History of England; Mediæval and Modern History; The Renaissance; The Reformation. Subjects 2, 3 and 4, three hours a week.
5. *Psychology.* Mental Physiology; Lectures. Three hours a week the first half-year.
6. *Natural and Revealed Religion.* Butler's Analogy.
7. *Christian Doctrines.* Barclay or Gurney. Subjects 6 and 7. Three hours a week the second half-year.
8. *Elocution and Composition.* A Public Oration at Commencement. Lectures.

ELECTIVE STUDIES.

(Nine or ten hours to be selected.)

1. *Analytical Mechanics.* Three hours a week through the year.
2. *Astronomy.* Loomis's Practical Astronomy, with practice in the Observatory. Two hours a week through the year. (Courses 1 and 2 are open only to those who have studied Mathematics in the Junior year.)
3. *Analytical Geometry and Calculus.* Three hours a week.
4. *Civil and Sanitary Engineering.* Mahan; Thurston; Searle; Waring; Field practice. Three hours a week.
5. *Physics.* Acoustics; Optics; Electricity; Magnetism. Twice a week.
6. *Chemistry.* Analysis and other Experimental Practice. Twice a week.
7. *General Biology.* Lectures and Laboratory Work. Twice a week.
8. *Greek Literature and Philology.* Demosthenes on the Crown, or an equivalent; Greek Pastoral and Lyric Poets; Greek Composition and Dictation Exercises; Papillon's Greek and Latin Inflections; Peile's Greek and Latin Etymology, with Curtius, Vaniček, and Corsen for reference; Inscriptions. Three hours a week.

9. *Latin and Classical Literature.* The Captives of Plautus, and Extemporalia; The Satires of Juvenal and Horace; Selections from Lucretius; The Ancient Pronunciation of Latin; Latin Composition; History of the Literatures of Greece and Rome. Three hours a week.

10. *Anglo-Saxon.* Sweet's Reader. Lectures on Historical English Grammar.

11. *German.* German Lyrics; Theodor Storm, *Immensee*; Chamisso, *Peter Schlemihl*; Schiller, *Wallenstein's Tod*; Goethe, *Iphigenie*; Exercises in Writing German. Three hours a week.

12. *French.* Translation into French and Exercises; Taine's Essays; Racine's *Athalie*; Molière or Corneille. Three hours a week.

13. *Hebrew.* Grammar; Exercises; Translations from the Old Testament. Three hours a week.

14. *Psychology.* Berkeley; Bowne. Three hours a week.

15. *History.* History of England; Selected Epochs; Constitutional and Political History of the United States. Three hours a week.

16. *Ecclesiastical History.* This Course will include a study of the most important parts of the Sub-Apostolic Literature. Three hours a week.

17. *English.* Bacon's Essays; Milton's *Areopagitica*; Shakspeare. Two hours a week.

18. *English.* Chaucer's *Canterbury Tales*; *Piers Plowman*; Literature of the Fourteenth Century. Two hours a week.

SCIENTIFIC COURSE.

FRESHMAN CLASS.

1. *Scripture*. The Gospel according to St. John. One hour a week.
2. *Mathematics*. Sharpless's Geometry; Wells's University Algebra; Wentworth's Trigonometry. Six hours a week.
3. *Latin*. Livy (Chase); The Odes and Epodes of Horace (Chase); Review of Latin Grammar; Translations at sight (Cicero, de Senectute and de Amicitia); Prose Composition. Four hours a week.
4. *Rhetoric and English Composition*. Principles of Rhetoric (A. S. Hill); Composition.
5. *History*. History of Greece; History of Rome; Greek and Roman Antiquities. Subjects 4 and 5, two hours a week.
6. *Physiology and Descriptive Botany*. Two hours a week.
7. *Drawing*. Free-hand and Mechanical. Three hours a week.

SOPHOMORE CLASS.

1. *Scripture*. The New Testament. One hour a week.
2. *Mathematics*. Wentworth's Plane and Spherical Trigonometry; Surveying, with Field Practice; Analytical Geometry. Three hours a week.
3. *French*. Chardenal's First French Course; Translation, Exercises, and Conversation. Two hours a week.
4. *German*. Joynes-Meissner's Grammar; Niebuhr's Heroengeschichten; Boisen's Prose Extracts; Translations at sight, and oral exercises. Two hours a week.
5. *Ethics*. Dymond's Essays on Morality. Two hours a week the first half-year.
6. *English Literature*. History of English Literature; Themes. One hour a week.
7. *History*. English History. Two hours a week the second half-year.
8. *Physics*. Four hours a week the first half-year.
9. *Chemistry*. Four hours a week the second half-year.
10. *General Biology*. Lectures and Laboratory Work. Twice a week.
11. *Drawing*. Mechanical Drawing from Objects, Geometrical Solids, etc., Isometric and Perspective Drawing. Three hours a week.

* * * Latin, Advanced French, or Elementary Greek may be taken if desired.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. The English Bible; or, the Greek Testament (for students having a sufficient knowledge of Greek). One hour a week.
2. *Mathematics*. Differential and Integral Calculus. Three hours a week.
3. *Geology*. Two hours a week the first half-year.
4. *Astronomy*. Descriptive Astronomy. Two hours a week the second half-year.
5. *German*. German Lyrics; Theodor Storm, *Immensee*; Chamisso, *Peter Schlemihl*; Schiller, *Wallenstein's Tod*; Goethe, *Iphigenie*; Exercises in Writing German. Two hours a week.
6. *Rhetoric and English Composition*. Themes.
7. *Political Science*. Political Economy; Constitution of the United States; Forensics. Subjects 6 and 7, four hours a week the second half-year.
8. *History*. Mediæval and Modern History.
9. *Logic*. Whately and Hamilton; or, Jevons.
10. *Psychology*. Haven's Mental Philosophy. Subjects 9 and 10, two hours a week.
11. *Physics and Chemistry*. Two hours a week.
12. *Elocution*. Rehearsals for Public Exercises; Lectures.

ELECTIVE STUDIES.

(Four hours to be selected the first half-year.)

1. *Chemistry*. Qualitative and Quantitative Analysis. Twice a week, counting as two hours of recitation.
 2. *Mineralogy*. Practical Exercises in Crystallography and Determination of Minerals; Dana's Text-Book. Two hours a week the second half-year.
 3. *Cryptogamic Botany and Vertebrate Zoology*. Laboratory Work and Lectures. Twice a week.
- * * * This course will, in alternate years, be replaced by a course in *Invertebrate Zoology and Embryology*.
4. *French*. Literature and Translation. Translation into French and Exercises. Taine's Essays; Racine's *Athalie*; Molière or Corneille. Two hours a week.
 5. *Elementary Greek*. Grammar and Xenophon; Greek Testament; Scientific Nomenclature; Homer. Two hours a week.
 6. *Latin*. Cicero's Tusculan Disputations; Pliny; Latin Poetry. Two hours a week (either or both half-years).

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. The English Bible, or Greek Testament. One hour a week.
2. *Political Science*. Political Economy; International Law (Lectures).

3. *English*. Philological Study; Themes and Forensics.
4. *History*. Mediæval and Modern History; The Renaissance; The Reformation; Constitutional History of England. Subjects 2, 3 and 4, three hours a week.
5. *Psychology*. Mental Physiology; Lectures. Three hours a week the first half-year.
6. *Natural and Revealed Religion*. Butler's Analogy.
7. *Christian Doctrines*. Barclay or Gurney. Subjects 6 and 7, three hours a week the second half-year.
8. *Elocution and Composition*. A Public Oration at Commencement; Lectures.

ELECTIVE STUDIES.

(Nine hours or ten hours to be selected.)

1. *Analytical Mechanics*. Three hours a week.
2. *Astronomy*. Loomis's Practical Astronomy, with special practice in the observatory. Two hours a week through the year.
3. *Experimental Physics*. Physical Measurements. Twice a week. (Open only to such students as have shown a marked proficiency.)
4. *Chemistry*. Analysis, and other experimental practice. Twice a week.
5. *Civil and Sanitary Engineering*. Mahan; Thurston; Searle; Waring; Field Practice. Three hours a week.
6. *Cryptogamic Botany and Vertebrate Zoology*. Lectures and Laboratory Work. Twice a week.
- *.* This course, in alternate years, will be replaced by a course in *Invertebrate Zoology and Embryology*.
7. *Psychology*. Berkeley; Bowne; Lectures. Three hours a week.
8. *Ecclesiastical History*. Three hours a week.
9. *History*. History of England; Selected Epochs; Constitutional and Political History of United States. Three hours a week.
10. *Greek*. Authors read in any year of the classical course; History of Greek Literature. Two hours a week.
11. *Latin*. Authors read in any year of the classical course.
12. *Hebrew*. Grammar Exercises; Translations from the Old Testament. Three hours a week.
13. *Philology*. Whitney; Peile.
14. *Anglo-Saxon*. Sweet's Reader; Lectures on Historical English Grammar.

ENGINEERING COURSE.

FRESHMAN CLASS.

1. *Scripture*. The Gospel according to John. One hour a week.
2. *Mathematics*. Sharpless' Geometry; Wells's University Algebra; Wentworth's Trigonometry. Six hours a week.
3. *Latin*. Livy (Chase); The Odes and Epodes of Horace (Chase); Review of Latin Grammar; Translations at sight (Cicero, de Senectute and de Amicitia).
Prose Composition. Four hour a week. (French and German may be substituted for Latin.)
4. *Rhetoric and English Composition*. Principles of Rhetoric (A. S. Hill); Composition.
5. *History*. History of Greece; History of Rome; Greek and Roman Antiquities. Subjects 4 and 5, two hours a week.
6. *Drawing*. Free-hand and Mechanical. Three hours a week.
7. *Shop Work*. Twice a week.

SOPHOMORE CLASS.

1. *Scripture*. One hour a week.
2. *Mathematics*. Advanced Algebra. One hour a week. Analytical Geometry and Calculus. Three hours a week.
3. *Science*. Chemistry; Qualitative Analysis; Laboratory Practice. Five hours a week. Physics; heat and its applications. Two hours a week.
4. *Languages*. German. Two hours a week. French. Two hours a week.
5. *Ethics and Political Science*. Two hours a week.
6. *Practical Mechanics*. Instruction in machine shop. Five hours a week.
7. *Surveying*. Field Practice. Two and one-half hours a week in spring and fall.
8. *Mechanical Drawing*. Working drawings made from measurements of parts of machines; finished plots of surveys. Five hours a week.

JUNIOR CLASS.

NOTE.—At this point election will be allowed to students of Mechanical or Civil Engineering, and the Course modified accordingly.

1. *Scripture*. One hour a week.
2. *Mathematics*. Analytical Mechanics. Three hours a week.

3. *Science*. Geology. Two hours a week the first half-year. Astronomy. Two hours a week the second half-year. Physics and Chemistry. Two hours a week. Analytical Chemistry; Laboratory Practice; Analysis of ores, iron, steel, water, boiler scales, etc. Twice a week.

4. *Languages*. Scientific German. Two hours a week. Scientific French. Three hours a week.

5. *Logic and Mental Philosophy*.

6. *Mechanical Engineering*. Materials of engineering. Two hours a week.

7. *Civil Engineering*. Theory; Constructions; Field Practice. Two hours a week, or equivalent in field work.

8. *Practical Mechanics*. Machine Work. Two and one-half hours a week.

9. *Mechanical Drawing*. Working drawings from measurements. Five hours a week the second half-year.

SENIOR CLASS.

NOTE.—The hours are not assigned to all the studies. Sixteen hours a week or equivalents will be required of all students.

1. *Scripture*. One hour a week.

2. *Natural and Revealed Religion*.

3. *Mechanical Engineering*. Rankine's Machinery and Mill Work, Boilers, Fuels, etc.

4. *Sanitary Engineering*. Lectures and discussions.

5. *Mathematics*. Mechanics of Hydraulics.

6. *Mechanical Draughting*. Designs and Working Drawings for Machines.

7. *Civil Engineering*. Rankine's Civil Engineering; Investigation of Existing Structures.

8. *Practical Astronomy*.

9. *Analytical Chemistry*.

LECTURES.

The Lectures and Courses of Lectures to the whole college for the year 1886-87 were as follows :

<i>The Leicester MS. of the New Testament</i> .	PROF. J. R. HARRIS.
<i>Poetry—its Past and Future</i>	DR. HENRY HARTSHORNE.
<i>John Milton</i>	} LUIGI MONTI.
<i>Personal Reminiscences of Longfellow</i> .	
<i>American History</i>	JAMES WOOD.
<i>Historical Recollections</i>	ELLIS YARNALL.
<i>Elocution</i>	EDWARD BROOKS.
<i>Hygiene</i>	DR. N. A. RANDOLPH.

VOLUNTARY WORK.

Conversation Classes are held for practice in speaking German.

The Haverford College Naturalists' Field Club, composed of sections in Geology, Botany, and Zoology, studies the rocks, flora and fauna of the vicinity, and holds monthly meetings for reading papers and for discussions.

Lectures and Practice Drills in Elocution are given to Seniors and Juniors.

Readings from Greek Authors and lectures on Greek Art are given for the benefit of students of Greek.

GRADING OF STUDENTS.

Students are divided according to their grades into five sections A, B, C, D, E. Each student is notified of the section to which he has been assigned, but the grades are not published. Section E is composed of those who cannot be advanced to the next higher class nor receive their Bachelor's degree. Daily recitations, hour examinations, and final examinations are all used as elements in determining the standing of a student.

ADVANCED DEGREES.

BACHELORS OF ARTS, BACHELORS OF SCIENCE, and BACHELORS OF ENGINEERING of three years' standing may take the degrees of MASTER OF ARTS, MASTER OF SCIENCE, or MECHANICAL or CIVIL ENGINEER on submitting to the Executive Committee satisfactory evidence of continued good moral character, and passing an examination on some literary or scientific course of study, which shall receive the approbation of the Faculty and Managers. As it is designed that these degrees shall represent real and solid attainments in scholarship, the results of the examination are considered by both Boards, who may call in to their assistance Professors of other Colleges, or other gentlemen of acknowledged authority in the subjects involved.

The following are stated as adequate courses of study to be presented by candidates for the second degree: particulars can be had on application to the President.

I. Hebrew. Mitchell's Gesenius' Hebrew Grammar. Critical and philological reading and analysis of I. and II. Samuel; I. and II. Kings. Sight reading of Genesis, unpointed; edition of Muehlan N. Kautzsch, Lipsæ 1885.

II. Assyrian. Lyon's Assyrian Manual. Friedrich Delitzsch's Assyrische Lesestücke. Syllabare (Sb. Sc.) S. 53-75. Neuassyrische Texte, (S. 110, 4-121.)

III. The whole of the New Testament in Greek, with Winer's or Buttmann's N. T. Grammar, Thayer's Lexicon, the introduction to N. T. of Scrivener and Hort.

IV. The whole of Thucydides, together with Grote and Curtius on the Peloponnesian War; Greek composition.

V. Twelve Tragedies of Æschylus, Sophocles, or Euripides; Greek composition.

VI. Cicero's Tusculan Disputations (five books), De Natura Deorum and De Officiis, together with the History of Ancient Philosophy; Latin composition.

VII. The whole of Tacitus, together with Merivale; Pliny's Letters; Latin composition.

VIII. Gervinus's History of Modern Europe, or Schiller's History of the Thirty Years War and Wallenstein (all parts), in the original German; together with a thorough examination in the nicer points of German Grammar and composition, and in translation at sight, both from German (not before read) into English and English into German.

IX. The Nicomachean Ethics of Aristotle (in the original); and Whewell's and Porter's Ethics.

X. Greek Literature, with translation at sight from any of the leading authors, and a short original essay in Greek on some topic connected with this subject.

XI. Latin Literature, with translations at sight from any of the leading authors, and an original essay in Latin.

XII. Pure Mathematics. Two subjects from Elliptical Functions, Higher Plane Curves, Theory of Invariants and Covariants.

XIII. Applied Mathematics. Two subjects from Hydrostatics; Attractions and Potentials; Rigid Dynamics; Hydrodynamics.

XIV. Thermodynamics.

XV. Theoretical Astronomy (Watson and Gauss).

XVI. Practical Astronomy (Doolittle and Chauvenet).

XVII. Rankine's Applied Mechanics, or Rankine's Civil Engineering.

XVIII. English History; Political, Constitutional, Literary.

XIX. American History; Political, Constitutional, Literary.

XX. Ecclesiastical History. A general knowledge of the leading facts in Early Church History and an acquaintance with Greek and Latin will be required; a special subject may be selected from the following:

a. The writings of Barnabas and Justin and the Teaching of the Twelve Apostles.

b. The Clementine and Ignatian Epistles.

c. The development of Christian Institutions: (Stanley, Hatch, etc).

d. The Ecclesiastical History of Eusebius.

XXI. Comparative Philology (Bopp, Max Müller, Whitney, Corssen, Curtius, Schleicher, Benfey, Fick, Leo Meyer, Pezzi). Some knowledge of Sanskrit will be expected of candidates in this course.

XXII. Modern Languages. Courses similar to VI., VIII., and IX. may be offered in any modern language other than English. A high degree of proficiency will be required.

XXIII. Gothic; Old High German; Anglo-Saxon; Early English.

XXIV. English Literature. (In addition to general knowledge of the whole field, an intimate acquaintance with the authors of some characteristic epoch will be required, and a good English style, manifested in original essays.)

XXV. Chemistry.

XXVI. Physics.

XXVII. Political Economy.

XXVIII. Zoology.

XXIX. Botany.

Candidates who are examined may also, if they desire, hand in Dissertations on topics in the field of study which they have specially investigated.

Resident Graduates, who have completed an adequate course of study, may be admitted to an examination for a second degree before the expiration of three years, if the Faculty deem it proper.

Graduates of other Colleges and Scientific Schools of good standing, who present satisfactory evidence of character and qualifications, will be admitted as candidates for the degree of Master of Arts. One year's residence at Haverford College will be required of all such students.

Masters of Arts and Science may be examined for the degrees of DOCTOR OF PHILOSOPHY and DOCTOR OF SCIENCE; but such degrees will be conferred only after satisfactory proof of the faithful and successful prosecution of courses of study fully equal in extent and quality to those required for similar honors in the best Universities.

Notice of application for examination must be given to the President two months before Commencement. The examinations will be held the last week in the Fifth month, and no later. The fee for the Diploma of the Second Degree is Twenty Dollars, of subsequent degrees, Thirty Dollars, to be paid in all cases before the 10th of the Sixth month.

ALUMNI PRIZE FOR COMPOSITION AND ORATORY.

The Association of the Alumni, in the year 1875, established an ANNUAL PRIZE of a Gold Medal, or of a Bronze Medal and Books of equal value, for excellence in Composition and Oratory.

The prize was awarded last year to WM. HARRISON FUTRELL, of the class of 1887, for his Oration on "The Question of the Hour."

The following are the Rules governing the competition :

I. The Alumni Medal is offered yearly to the competition of the members of the Senior and Junior Classes, as a prize for the best delivered oration prepared therefor.

II. Three or five Judges shall be appointed from year to year by the Alumni Committee, who shall, on the evening of the last Sixth day in the Fifth month, hear publicly, in Alumni Hall, all competitors who may be qualified to appear.

III. No oration shall occupy in delivery more than fifteen minutes.

IV. In making their award, while due weight is given to the literary merits of the oration, the Judges are to consider the prizes as offered to encourage more especially the attainment of excellence in elocution.

V. The Judges shall have the right to withhold the prize, if the elocution and the literary merits of the orations fall below a suitable standard of excellence.

LIBRARY.

LIBRARIAN, Professor Allen C. Thomas; Albert J. Edmunds, *Assistant*. COMMITTEE in charge of the Library, Richard Wood, *Chairman*; Philip C. Garrett, Charles Roberts, Howard Comfort, Francis Stokes, James Wood.

The number of bound volumes in the Library Hall, accessible to the members of the College, is 16721. Of these the LIBRARY OF HAVERFORD COLLEGE contains 11880 volumes; that of the LOGANIAN SOCIETY, 2541; those of other societies, 2300. Numerous American and European periodicals, scientific and literary, are taken by the Library.

The income of a fund of ten thousand dollars is devoted annually to the increase of the Library.

The Library is open as a reading-room several hours daily, during which the volumes in the alcoves may be freely consulted. The Librarian devotes stated hours each week to the purpose of assisting and directing students in their reading, and in the skilful use of books of reference and consulting of authorities. He also arranges courses of reading.

A CARD CATALOGUE of the College and the Society Libraries shows at once what books, essays, or review articles these Libraries possess on any subject, and where they may be found.

MUSEUM.

CURATOR, Professor J. P. McMurrich. COMMITTEE in charge of the Museum, Charles Roberts, *Chairman*; David Scull, Howard Comfort, Elliston P. Morris.

The MINERALOGICAL CABINET contains over 3000 specimens, and the GEOLOGICAL about 2500. There are also collections of FOSSILS and SHELLS; a valuable collection of BIRDS and BIRDS' EGGS; a number of Ward's CASTS of fossil species; an HERBARIUM illustrating the Flora of the vicinity; and a large number of Zoological specimens other than Birds and Shells.

BIOLOGICAL LABORATORY.

DIRECTOR, Prof. J. P. McMurrich.

This laboratory is furnished with a number of Microscopes for Students' use, a set of Auzoux's Clastic Models, Kny and Dodel-Port's Botanical Diagrams, and other necessary apparatus for Biological investigation.

CHEMICAL AND PHYSICAL LABORATORIES.

DIRECTOR, Prof. Lyman B. Hall.

EXTENSIVE APPARATUS is furnished for the illustration of Physics and Chemistry.

The CHEMICAL LABORATORY has separate working tables for thirty-eight students, and includes resources for practical work of various kinds.

THE GYMNASIUM.

DIRECTOR, Dr. W. A. Ford.

The GYMNASIUM was refitted early in 1881 with the apparatus of Dr. D. A. Sargent, Director of the Hemenway Gymnasium of Harvard University. A competent teacher, a graduate of Jefferson Medical College and a pupil of Dr. Sargent, has direction of it, and gives systematic instruction, based upon careful personal examination, to each student desiring such aid. Regular work in the Gymnasium is required of all members of the Sophomore and Freshman Classes.

ASTRONOMICAL OBSERVATORY.

DIRECTOR, Prof. F. P. Leavenworth.

The HAVERFORD OBSERVATORY affords the students the means of becoming familiar with the use of astronomical instruments, and of acquiring, from actual observation, a practical acquaintance with Astronomy.

It contains two Equatorial Telescopes, one by Clark, having an object-glass 10 inches in diameter, and one with an object glass of $8\frac{1}{4}$ inches, with filar micrometer, ring micrometer, and eye-pieces; a polarizing eye-piece; a Newtonian Reflector, with a silver-on-glass speculum of $8\frac{1}{4}$ inches diameter; a Prism Spectroscope; a Meridian Transit Circle, having a Telescope of 4 inches aperture, with a circle at each end of the axis 26 inches in diameter; a Zenith Instrument of $1\frac{3}{4}$ inches aperture, with a micrometer; two Sidereal Clocks, one with mercurial compensation, the other used to connect with a Bond's Magnetic Chronograph.

The latitude of the observatory is $40^{\circ} 0' 40''$ N.; its longitude, 6 m. 59.4 sec. East from Washington.

A Special Course in Astronomy is offered to Amateurs and Teachers. The requisites for the Course and the fees charged will depend on the work which the applicant desires to perform.

DEPARTMENT OF ENGINEERING.

DIRECTOR, Prof. Levi T. Edwards.

The MACHINE SHOP is equipped with all the tools necessary for instruction in carpenters' and machinists' work, including hand and machine lathes, shaper, drill press, forge, vises, etc., with a 10 horse-power steam engine and boiler.

The work in the shop is conducted by means of progressive exercises, combining the principles met with in machine construction.

There are full sets of the instruments necessary for the practical work of civil engineering.

A course in practical astronomy is included in the civil engineering work.

The students, under the care of the director, will be taken to visit machine shops and engineering constructions in Philadelphia and its vicinity.

SOCIETIES.

The LOGANIAN SOCIETY was established by the Officers and Students in 1834. It has in its possession a carefully selected Library of 2541 volumes.

The ATHENÆUM and EVERETT are literary societies of the students. Their libraries contain 2300 volumes.

DEGREES GRANTED IN 1887.

At the Commencement in 1887 Degrees were granted in course,
to the following graduates :

BACHELORS OF ARTS.

EDWARD BUCHANAN CASSATT,
WILLIAM HARRISON FUTRELL,
ALFRED COPE GARRETT,
HENRY HERBERT GODDARD,
WILLIS HATFIELD HAZARD,
BARKER NEWHALL,
JESSE EVANS PHILIPS,
HENRY WARRINGTON STOKES,
FREDERIC HEAP STRAWBRIDGE,
RICHARD JANNEY WHITE,
GEORGE BACON WOOD,
WILLIAM CONGDON WOOD.

BACHELORS OF SCIENCE.

ARTHUR HALLAM BAILY,
CHARLES HAMPTON BEDELL,
HORACE YOUNG EVANS, JR.,
HUGH LESLEY,
WILLIAM WEBSTER TRIMBLE.

BACHELOR OF ENGINEERING.

P. HOLLINGSWORTH MORRIS.

DOCTOR OF LETTERS.

The degree of DOCTOR OF LETTERS was bestowed *honoris causa*
upon

THOMAS KIMBER, of the Class of 1842.

LIST OF GRADUATES AND HONORARY DEGREES.

(Degrees conferred by other institutions are indicated by *italics*.)

GRADUATES.

1836
Thomas F. Cock, *M.D.*, LL.D.
Joseph Walton

1837
*William C. Longstreth, *1881
*David C. Murray, *1885
Lindley Murray
*Benjamin V. Marsh, *1882
*Joseph L. Pennock, *1870
Robert B. Parsons
*Charles L. Sharpless, *1882
*Lloyd P. Smith, A. M., *1886
*B. Wyatt Wistar, *1869

1838
*James V. Emlen, *M.D.*, *1880
John Elliott

1839
Frederick Collins
Thomas P. Cope
Henry Hartshorne, *M.D.*, A. M.
Nereus Mendenhall, *M.D.*
Richard Randolph, Jr., *M.D.*
Charles Taber

1840
Joseph Howell
Anthony M. Kimber
*Henry H. G. Sharpless, *1870
*John R. Winslow, *M.D.*, *1866

1841
*Richard H. Lawrence, *1847
*James P. Perot, *1872
*Elias A. White, *1866

1842
Robert Bowne
Richard Cadbury
*William S. Hilles, *1876
Thomas Kimber, Jr., LLT. D.
James J. Levick, A.M., *M.D.*
Edmund Rodman
Thomas R. Rodman
Benjamin R. Smith
Augustus Taber
Caleb Winslow, *M.D.*

1843
Robert B. Howland
Francis White
*William D. Stroud, *M.D.*, *1883

1844
Evan T. Ellis
Robert B. Haines
Isaac Hartshorne

1845
Edmund A. Crenshaw
*Robert Pearsall, *1849

* 1849
Albert K. Smiley, A.M.
Alfred H. Smiley, A.M.

1851
Joseph L. Bailey
Philip C. Garrett
Thomas J. Levick
Franklin E. Paige, A.M.
Zaccheus Test, *M.D.*, A.M.
James C. Thomas, *M.D.*, A.M.
Richard Wood

1852
Dougan Clark, *M.D.*
Lewis N. Hopkins
William L. Kinsman
William E. Newhall
James Whitall

1853
William B. Morgan, A.M.
William H. Pancoast, *M.D.*, A. M.

1854
Frederick Arthur, Jr.
John W. Cadbury
John B. Garrett
David Scull, Jr.

1855
*Samuel Bettie, *1859
John R. Hubbard, A.M.

1856

Bartholomew W. Beesley
 Joel Cadbury, Jr.
 Jonathan J. Comfort, *M.D.*
 *James M. Walton, *1874
 Edward R. Wood, A.M.

1857

Jesse S. Cheyney, A.M.
 *Cyrus Mendenhall, *1858
 Stephen Wood

1858

Thomas H. Burgess
 Thomas Clark
 Daniel W. Hunt
 *Samuel T. Satterthwaite, *1865
 William G. Tyler
 Thomas Wistar, A.M., *M.D.*
 Ellis H. Yarnall, *L.L.B.*

1859

*Richard W. Chase, *1862
 James R. Magee
 *Richard C. Paxson, *1864
 *Edward Rhoads, *M.D.*, *1871
 Edward C. Sampson
 *George Sampson, *1872
 Abram Sharples, *M.D.*
 Benjamin H. Smith

1860

*Lindley M. Clark, *1861
 *William B. Corbit, *M.D.*, *1882
 *William M. Corlies, *1881
 Cyrus Lindley
 Theodore H. Morris
 Frederick W. Morris
 Richard Pancoast
 John W. Pinkham, *M.D.*
 Francis Richardson
 Clement L. Smith, A.M.
 James Tyson, *M.D.*, A. M.
 Silas A. Underhill, *L.L.B.*

1861

Edward Bettie
 *Henry Bettie, *1886
 *Charles Bettie, *1883
 William B. Broomall
 Charles H. Jones
 *Thomas W. Lamb, A. M., *M.D.*
 *1878
 William N. Potts
 Jehu H. Stuart, A.M., *M.D.*
 John C. Thomas

1862

Henry T. Coates, A.M.
 *Samuel A. Hadley, *1864

Horace G. Lippincott
 George B. Mellor
 Horace Williams, *M.D.*
 Isaac F. Wood

1863

Thomas J. Battey
 George M. Coates, Jr., A.M.
 William M. Coates
 *Richard T. Jones, *1869
 William H. Morris
 Joseph G. Pinkham, *M.D.*, A.M.

1864

*Franklin Angell, A.M., *1882
 *William Ashbridge, *M.D.*, *1884
 Edward H. Coates
 Howard M. Cooper, A.M.
 Albin Garrett
 Morris Longstreth, *M.D.*, A.M.
 Albert Pancoast
 Charles Roberts
 E. Pope Sampson
 *Edward L. Scull, *1884
 *Randolph Wood, *1876

1865

John R. Bringham
 Edward T. Brown
 James A. Chase
 Joseph M. Downing
 Arthur Haviland
 *David H. Nichols, *1865
 Henry W. Sharpless
 *George Smith, Jr., *1872
 Robert B. Taber, A.M.
 Allen C. Thomas, A.M.
 Benjamin A. Vail
 Caleb Cresson Wistar

1866

A. Marshall Elliott, A.M.
 Benjamin E. Valentine, *L.L.B.*

1867

*John Ashbridge, *1881.
 George Ashbridge, A.M., *L.L.B.*
 William P. Clark, A.M., *L.L.B.*
 Samuel C. Collins, A.M.
 Nathaniel B. Crenshaw
 Charles H. Darlington, A.M.
 *Wm. T. Dorsey, *M.D.*, *1870
 B. Franklin Eshleman
 Richard M. Jones, A.M.
 Charles W. Sharpless
 Walter Wood

1868

Edward H. Cook
 *Alexis T. Cope, *1883
 Benjamin C. Satterthwaite

Louis Starr, *M.D.*
S. Finley Tomlinson
Joseph H. Wills, A.M., *M.D.*

1869

Johns H. Congdon
Henry Cope, A.M.
Ludovic Estes, *A.M.*
*Henry Evalul, A.M., *1877
*William B. Kaighn, *1876
Pendleton King, A.M.
William H. Randolph
Edward B. Taylor, *M.C.E.*
William S. Taylor
James G. Whitlock
Walter Wood
Henry Wood, *Ph.D.*

1870

J. Stuart Brown
John E. Carey
Alford G. Coale
Howard Comfort
T. Allen Hilles
William H. Hubbard, *M.D.*
*Thos. K. Longstreth, A.M., *1883
Oliver G. Owen, A.M.
Charles E. Pratt, A.M.
David F. Rose
*John D. Steele, *1886
Charles Wood, A.M.
Stuart Wood, *Ph.D.*

1871

Henry G. Brown
William P. Evans
John S. Garrigues
Reuben Haines, A.M.
William H. Haines
Joseph Hartshorne
Jesse F. Hoskins
Walter T. Moore
Ellis B. Reeves
Alfred R. Roberts, *C.E.*
Charles S. Taylor
Edward D. Thurston
Randolph Winslow, *M.D.*, A.M.

1872

Richard Ashbridge, *M.D.*
Richard T. Cadbury, A.M.
James Carey, Jr., *L.L.B.*
Thomas S. Downing, Jr.
Walter Erben
Thomas Roland Estes
John E. Forsythe
William H. Gibbons, A.M.
Francis B. Gummere, A.M., *Ph.D.*
Casper Wistar Haines, A.M., *C.E.*
Abram Francis Huston
*Marmaduke Cope Kimber, A. M.,
*1878.

William M. Longstreth
Richard H. Thomas, *M.D.*

1873

James C. Comfort
Thomas P. Cope, Jr.
George W. Emlen
Joseph M. Fox
Henry C. Haines
Benjamin H. Lowry, A.M.
Alden Sampson, A.M.
Julius L. Tomlinson, A.M.
Edward P. Allinson, A.M.
John G. Bullock
James Emlen
Charles R. Hartshorne, *L.L. B.*
Samuel E. Hilles
John B. Jones
Mahlon Kirkbride
Theophilus P. Price
James B. Thompson
Joseph Trotter

1875

Edward K. Bispham.
Alonzo Brown, A.M.
J. Franklin Davis, A.M.
Charles E. Haines
William Hunt, Jr.
Charles L. Huston
Harold P. Newlin
Walter W. Pharo
Charles E. Tebbetts
Miles White, Jr.

1876

Francis G. Allinson, A.M., *Ph.D.*
David S. Bispham
Reuben Colton
Henry W. Dudley
Seth K. Gifford, A.M.
L. Lyndon Hobbs, A.M.
Richard H. Holme
*Thomas Wm. Kimber, *1885
Charles A. Longstreth
J. Whitall Nicholson
Percival Roberts, Jr.
Frank H. Taylor
Howard G. Taylor
*Lewis A. Taylor, *1881

1877

A. B.

Isaac W. Anderson
Frederic L. Bailly
Isaac Forsythe
James D. Krider
George G. Mercer, *D.C.L.*
Wilson Townsend

S. B.

William F. Smith

1878

A.B.

Henry Bailly, A.M.
 Albert L. Bailly
 Francis K. Carey, *LL.B.*, A.M.
 Edward T. Comfort
 Charles S. Crosman
 Samuel H. Hill
 Lindley M. H. Reynolds
 Daniel Smiley, Jr.
 Henry L. Taylor, A. M., *M.D.*
 John M. W. Thomas
 George W. White

S.B.

Jonathan Eldridge
 Edward Forsythe
 Cyrus P. Frazier, *A.B.*
 Robert B. Haines, Jr.
 Henry N. Stokes, *Ph.D.*

1879

A.B.

Samuel Bispham, Jr.
 Edward Gibbons
 John H. Gifford, *M.D.*
 Francis Henderson, *LL. B.*
 William C. Lowry
 John B. Newkirk
 John E. Sheppard, Jr., *M.D.*

1880

A.B.

Charles F. Brede
 Charles E. Cox
 Josiah P. Edwards
 James L. Lynch
 Samuel Mason, Jr.
 William F. Perry
 Joseph Rhoads, Jr., A.M.

S.B.

William Bishop
 Alexander P. Corbit
 Charles E. Gause, Jr.
 Edward M. Jones

1881

A.B.

William A. Blair
 A. Morris Carey
 Levi T. Edwards
 Edward Y. Hartshorne
 Isaac T. Johnson, A.M.
 Edwin O. Kennard
 Jesse H. Moore
 William E. Page
 Walter F. Price, A.M.
 Thomas N. Winslow
 John C. Winston

S.B.

Walter Brinton
 William H. Collins
 Joseph H. Cook
 Davis H. Forsythe
 Albanus L. Smith

1882

A.B.

George A. Barton, A.M.
 Isaac M. Cox
 Richard B. Hazard
 Wilmot R. Jones
 *Wilmer P. Leeds, *1885
 J. Henley Morgan
 Edward Randolph

S.B.

John E. Coffin
 Daniel Corbit
 George L. Crosman
 Frederic D. Jones
 T. Chalkley Palmer
 Lindley M. Winston

1883

A.B.

John Blanchard
 Frank E. Briggs
 George H. Evans
 Francis B. Stuart
 Bond V. Thomas
 Thomas K. Worthington

S.B.

William L. Bailly
 Stephen W. Collins
 D. William Edwards
 Samuel B. Shoemaker, *M.D.*
 John D. Spruance
 W. Alpheus White
 Charles H. Whitney
 Louis B. Whitney

1884

A.B.

John Henry Allen
 Orren William Bates
 Thomas Herbert Chase
 William J. Haines
 Arthur Dilwyn Hall
 Charles R. Jacob
 Alfred Percival Smith

S.B.

Louis T. Hill
 Walter L. Moore
 George Vaux, Jr.

L.B.

Francis A. White.

1885	S.B.	Thomas W. Betts
A.B.		Guy R. Johnson
Samuel Bettle		William S. McFarland
Enos L. Doan		Israel Morris, Jr.
William T. Ferris		William P. Morris
William S. Hilles		Alfred M. Underhill, Jr.
William T. Hussey		Wilfred W. White
Arthur W. Jones	1887	
Rufus M. Jones, A.M.	A.B.	
Joseph L. Markley, A.M.		Edward B. Cassatt
Marriott Canby Morris		William H. Futrell
Augustus T. Murray		Alfred C. Garrett
Augustus H. Reeve		Henry H. Goddard
William F. Reeve		Willis H. Hazard
Isaac Sutton		Barker Newhall.
Elias H. White		Jesse E. Philips, Jr.
William F. Wickersham		Henry W. Stokes
S.B.		Frederick H. Strawbridge
Charles W. Bailly		Richard J. White
John J. Blair		George B. Wood
Thomas Newlin		William C. Wood
Theodore W. Richards	S.B.	
Matthew T. Wilson		Arthur H. Bailly
1886		Charles H. Bedell
A.B.		Horace Y. Evans, Jr.
Jonathan Dickinson, Jr.		Hugh Lesley
Alexander H. Scott		William W. Trimble
Horace E. Smith	B.E.	
Edward D. Wadsworth		P. Hollingsworth Morris.

Whole number of graduates, 417.

HONORARY DEGREES.

1858	1877
Hugh D. Vail, A.M.	John J. Thomas, A.M.
1859	1879
*Joseph W. Aldrich, A.M., *1865	Ellis Yarnall, A.M.
1860	1880
John G. Whittier, A.M.	Thomas Chase, LTT.D.
1864	Thomas Hughes, LL.D.
Edward D. Cope, A.M.	1883
1867	James Wood, A.M.
Joseph Moore, A.M.	Henry N. Hoxie, A.M.
1872	1884
William Jacobs, A.M.	Joseph Parrish, A.M.
1875	Elijah Cook, A.M.
Samuel Alsop, Jr., A.M.	1885
1876	Robert Howland Chase, A.M.
*Pliny E. Chase, LL.D., *1886	1886
	Edward Hicks Magill, LL.D.

CATALOGUE
OF
HAVERFORD COLLEGE.



1888-89.

CATALOGUE
OF
HAVERFORD COLLEGE

(HAVERFORD COLLEGE P. O., PA.)

1888-89.



Philadelphia:
PRESS OF FERRIS BROTHERS
SIXTH AND ARCH STREETS

CALENDAR.

College Year* 1888-89 began,	9th Mo. 19
Winter Recess begins,	12th Mo. 22
Winter Term begins, 1889,*	1st Mo. 3
Mid-year Examinations begin,	1st Mo. 25
Second Half-year begins,	2d Mo. 1
Junior Exercises,	4th Mo. 11
Spring Recess begins,	4th Mo. 12
Spring Term begins,*	4th Mo. 23
Alumni Prize Oration,	5th Mo. 31
Alumni Meeting,	6th Mo. 24
Examinations for Admission, 9.30 A. M.,†	6th Mo. 24
Commencement Day, 1889,	6th Mo. 25

VACATION OF TWELVE WEEKS.

Examinations for Admission, 9.30 A.M., †	9th Mo. 17
College Year 1889-90 begins,*	9th Mo. 18
Winter Recess begins,	12th Mo. 21
Winter Term begins, 1889,*	1st Mo. 3
Second Half-year begins, 1890,	2d Mo. 1
Spring Recess begins,	4th Mo. 18
Commencement Day, 1890,	6th Mo. 24

* The first recitations are due, promptly at *half-past nine o'clock*, at the beginning of each Term. No absences from them are excused, unless clearly unavoidable.

CONTENTS.

Calendar,	2
History and Description,	4
Corporation,	8
Faculty,	9
Graduate Students,	11
Seniors,	12
Juniors,	13
Sophomores,	14
Freshmen,	15
Summary,	15
Admission,	16
Expenses,	18
Courses of Instruction,	20
Course in Arts and Science,	21
Scientific Course,	23
Mechanical Engineering Course,	25
Chemical and Electrical Courses,	25
Elective Courses,	26
Lectures,	28
Grading of Students,	29
Advanced Degrees,	30
Alumni Prize,	32
Library,	33
Museum,	33
Chemical Laboratory,	34
Biological Laboratory,	34
Physical Laboratory,	34
Department of Engineering,	35
Astronomical Observatory,	35
Gymnasium,	36
Societies,	36
Degrees granted in 1888,	37

HISTORY AND DESCRIPTION.

IN the spring of 1830, a meeting of a few Friends in Philadelphia, shortly followed by a similar meeting in New York, originated Haverford School. The joint committee expressed the object of the effort as follows: "The members of the Society of Friends, having hitherto labored under great disadvantages in obtaining for their children a guarded education in the higher branches of learning, combining the requisite literary instruction with a religious care over the morals and manners of the scholars, . . . and carefully preserving them from the influence of corrupt principles and evil communications, it is therefore proposed that an institution be established, in which the children of Friends shall receive a liberal education in ancient and modern literature, and the mathematical and other sciences."

The \$40,000 supposed to be necessary was raised without effort, and the Committee went out to seek a location. They say: "We wished to procure a farm in a neighborhood of unquestioned salubrity—within a short distance of a Friends' meeting—of easy access from this city at all seasons of the year, . . . and that was recommended by the beauty of the scenery and retired situation." Then they go on to say, that of the many places presented to them the only one which combined all the advantages was one of 198½ acres (since increased to 215), "near the eight-mile stone on the Lancaster Turnpike." They explain the present and prospective merits of the farm, the beauty of the natural woods, the unfailing springs of purest water, the nearness to the new Pennsylvania Railroad, in words which the succeeding half-century has amply justified.

On the 28th of Tenth Month, 1833, the school opened with 21 students. Provision had been made for three teachers and a superintendent.

"A Teacher of Ancient Languages and Ancient Literature.

"A Teacher of English Literature and of Mental and Moral Philosophy.

"A Teacher of Mathematics and Natural Science."

The Superintendent was to have charge of the order and domestic economy of the family.

The regulations of the new school were rigid. The bounds and time of the boys were very strictly marked out. All the details of the daily programme were arranged with great care; and if the elaborate provision of a number of wise men for the normal growth of students could convert boys into perfect men, the students of Haverford of fifty years ago had every advantage.

The High School thus established, grew rapidly into prosperity and debt. The charges were low, the teachers were liberally paid, and the years which followed were marked by a constant endeavor to produce a maximum of good fruits from very limited funds. The deficiencies were made up in a liberal spirit, and a constant growth maintained by frequent subscriptions. All the time the school was justifying the effort by the quality of its results, and making for itself an increasing number of friends.

One of the first acts of the Committee, after the absolute necessities of the school were provided for, was to construct a gymnasium, and make arrangements for systematical physical work. They were determined that the advantage gained by the salubrity of the surroundings should not be lost for want of exercise. Under their care the lawn was graded at great expense, and foreign and native trees set out, with the design to make it a great arboretum. Cricket was introduced, a game not known elsewhere in America, and has always flourished since. A greenhouse and flower garden were established and maintained for twenty years by the work of the boys. The ideas that have done harm elsewhere, that schools were places for mental development only, had no foothold here, but morals, muscle and senses received their due share of culture.

In 1845 a temporary suspension was decreed, to allow the funds to accumulate, and give time for the collection of an endowment, which suspension lasted for three years. In 1852 the observatory was built, and supplied with an 8-inch equatorial and 4-inch transit. In 1856 the school was changed to a college, and authorized by the Legislature to grant degrees, but previous to this time the course had been as extended as in many colleges. It was still hampered with a large preparatory department, which was not abolished till 1861. In 1863 Alumni Hall and Library were built. In 1876-7, Barclay Hall, con-

taining private dormitories and study-rooms, was erected, at a cost of \$82,000, which was collected by subscription. The Chemical Laboratories were perfected in 1878. The new Observatory was built in 1883, the Machine Shop established in 1884, the Biological Laboratory in 1886, and the Physical Laboratory in 1888.

During this time Haverford had developed into a fully organized college. Many rules, adapted to boys of a boarding-school age, had been modified or abandoned, though enough of restraint was retained to provide against demoralization. The standard of admission was raised. Students of any denomination were admitted, though Friends still retained the general control. The number of teachers was increased five-fold. By various donations and bequests the endowment fund was greatly enlarged and all debts cleared away. The annual charge was increased from \$200 to \$500,* which is still less than the college has to pay for professors' salaries and board and care of students. Retaining the old idea of a "guarded education" and "a religious care over morals and manners," the college has sought to effect these results, and has measurably succeeded, rather by appeals to Christian principles and manliness than by arbitrary power.

In Barclay Hall, the hall of residence, two students occupy a study-room, and each has his private adjoining bed-room. A few single rooms are also provided. Recitation-rooms, laboratories, and dining-room are in Founders' Hall. The library and observatory are in separate buildings near by. Some of the professors live in the halls with the students and others have cottages on the grounds.

The college has a remarkably pleasant and healthful location in the township of Haverford, Delaware County,† Pa., nine miles west of Philadelphia, on the Pennsylvania Railroad. The buildings are surrounded by grounds of about sixty acres, tastefully laid out and adorned with well-kept lawns, and a great variety of trees and shrubbery. These grounds comprise excellent fields for cricket, baseball, foot-ball, tennis and other field games, a running and bicycle track and a pond for skating.

* Owing to the prospect of more students in the Fall of 1889 than Barclay Hall will accommodate, it has been concluded to open another building as a boarding house. The rooms will be convenient and comfortable. The charge for room rent will be reduced so as to make the total cost to students of room rent, board and tuition \$375 or \$425, depending on the accommodation.

† Haverford College *Post-Office* is in Montgomery County.

The courses of study are designed to give a liberal education. Their scope will be seen on the following pages. Religious instruction is carefully provided. In addition to the daily reading of the Holy Scriptures, recitations in the English or Greek New Testament are required of the student once a week. By exposition and collateral information the instructors endeavor to enforce the true meaning of the lessons. Haverford College desires to inculcate the simple truths of the Christian religion.

CORPORATION.

President,

WISTAR MORRIS,

209 S. Third Street, Philadelphia.

Secretary,

ELLISTON P. MORRIS,

21 North Seventh Street, Philadelphia.

Treasurer,

ASA S. WING,

409 Chestnut Street, Philadelphia.

MANAGERS.

WISTAR MORRIS,
T. WISTAR BROWN,
JAMES WHITALL,
JAMES CAREY THOMAS,
PHILIP C. GARRETT,
RICHARD CADBURY,
DAVID SCULL,
RICHARD WOOD,
ROBERT B. HAINES,
FRANCIS T. KING,
WILLIAM R. THURSTON,
CHARLES HARTSHORNE,
JOHN B. GARRETT,

EDWARD BETTLE, JR.,
CHARLES ROBERTS,
FRANCIS WHITE,
BENJAMIN H. SHOEMAKER,
HOWARD COMFORT,
WILLIAM S. TAYLOR,
JUSTUS C. STRAWBRIDGE,
ASA S. WING,
ELLISTON P. MORRIS,
FRANCIS STOKES,
JAMES WOOD,
ABRAM F. HUSTON,
J. PRESTON THOMAS,

WILLIAM H. HAINES.

Secretary of the Board,

HOWARD COMFORT,

529 Arch Street, Philadelphia.

Executive Committee,

JAMES WHITALL,
DAVID SCULL,
EDWARD BETTLE, JR.,
PHILIP C. GARRETT,
CHARLES ROBERTS,

JOHN B. GARRETT,
JUSTUS C. STRAWBRIDGE,
HOWARD COMFORT,
ASA S. WING,
RICHARD WOOD.

FACULTY.*

ISAAC SHARPLESS, Sc.D., PRESIDENT,
and Professor of Mathematics and Astronomy.

ALLEN C. THOMAS, A.M., LIBRARIAN,
and Professor of History and Rhetoric.

LYMAN BEECHER HALL, Ph.D.,
John Farnum Professor of Chemistry.

SETH K. GIFFORD, A.M.,
Professor of Greek.

† JAMES RENDEL HARRIS, A.M.,
Professor of Bible Languages and Ecclesiastical History.

MYRON R. SANFORD, A.M., REGISTRAR,
and Professor of Latin.

LEVI T. EDWARDS, A.B.,
Professor of Mechanical Engineering.

J. PLAYFAIR McMURRICH, Ph.D.,
David Scull Professor of Biology.

WILLIAM C. LADD, A.M.,
Professor of French.

FRANCIS B. GUMMERE, Ph.D.,
Professor of English and German.

* Arranged primarily as Professors, Instructors, etc., secondarily in the order of appointment.

† Absent for the year in Syria.

HAVERFORD COLLEGE.

WALTER A. FORD, M.D.,

Instructor in Physical Training and Director of the Gymnasium.

ROBERT W. ROGERS, A.B.,

Instructor in Hebrew.

FRANCIS P. LEAVENWORTH, A.M.,

Director of the Observatory.

FRANK MORLEY, A.M.,

Instructor in Mathematics.

HENRY CREW, PH.D.,

Instructor in Physics.

JONATHAN J. COMFORT, M.D.,

Secretary of the College.

ALBERT J. EDMUNDS,

Assistant in the Library.

GRADUATE STUDENTS.

GUMMERE, HENRY VOLKMAR, S.B., Haverford College, Pa.
Major Subject—Astronomy.

SLOCUM, ALLISON WING, A.B., Dartmouth, Mass.
Major Subject—Mathematics.

STUBBS, MARTIN BELL, A.B., Philadelphia, Pa.
Major Subject—Chemistry,

SENIOR CLASS.

CLASSICAL SECTION.

BANES, ROBERT COLEMAN,	Philadelphia, Pa.
BRANSON, THOMAS FRANKLIN,	Moorestown, N. J.
BURR, CHARLES H., JR.,	Philadelphia, Pa.
EVANS, THOMAS,	Germantown, Pa.
FITE, WARNER HUTCHINSON,	Philadelphia, Pa.
GOODWIN, WARREN C.,	Greenwich, N. J.
HAUGHTON, VICTOR MELLET,	Bryn Mawr, Pa.
KIRKBRIDE, FRANKLIN BUTLER,	Philadelphia, Pa.
LEWIS, DANIEL CLARK,	Susp. Bridge, N. Y.
MORRIS, LAWRENCE JOHNSON,	Philadelphia, Pa.
OVERMAN, WILLIAM FRANKLIN,	Goldsboro, N. C.
PEIRSON, FRANK WARRINGTON,	Lockport, N. Y.
RAVENEL, SAMUEL PRIOLEAU, JR.,	Charleston, S. C.
READE, WALTER GEORGE,	Philadelphia, Pa.
STEVENS, LINDLEY MURRAY,	East Farnham, Canada.
STOKES, JOHN STOGDELL,	Moorestown, N. J.
TODHUNTER, LAYTON W.,	Wilmington, Ohio.
VAIL, FREDERICK NEILSON	Los Angeles, Cal.
WOOD, GILBERT CONGDON,	New York, N. Y.

SCIENTIFIC SECTION.

DUNTON, WILLIAM RUSH,	Germantown, Pa.
LEEDS, ARTHUR NEWLIN,	Philadelphia, Pa.
PAINTER, JOSIAH HENRY,	New Burlington, Ohio.
REINHARDT, DAVID JONES,	Marlboro, Pa.
THOMPSON, FRANK EARLE,	Little Rock, Ark.

ENGINEERING SECTION.

MORRIS, HERBERT,	Germantown, Pa.
----------------------------	-----------------

JUNIOR CLASS.

CLASSICAL SECTION.

ANGELL, EDWARD MOTT,	South Glens Falls, N. Y.
AUCHINCLOSS, JAMES STUART,	Bryn Mawr, Pa.
AUDENRIED, WILLIAM GRATTAN,	Chestnut Hill, Pa.
BRINGHURST, HENRY RYAN, JR.,	Wilmington, Del.
COTTRELL, CHARLES THURSTON,	Jamestown, R. I.
DAVIES, GUY HULETT,	Towanda, Pa.
GILBERT, HENRY LEE,	Philadelphia, Pa.
JANNEY, THOMAS S.,	Churchville, Md.
KIRKBRIDE, THOMAS STORY,	Philadelphia, Pa.
STEERE, JONATHAN MOWRY,	Burrillville, R. I.

SCIENTIFIC SECTION.

BUTLER, GEORGE THOMAS,	West Chester, Pa.
DARLINGTON, PERCY SMEDLEY,	West Chester, Pa.
GUSS, JOHN NOBLE,	West Chester, Pa.
HALEY, EDWIN JAMES,	West Chester, Pa.
OSBORNE, WILLIAM C.,	Plainfield, Ind.
HIBBERD, DILWORTH P.,	Malvern, Pa.
TATNALL, ROBERT R.,	Wilmington, Del.
TEVIS, ALFRED COLLINS,	Haverford College, Pa.

ENGINEERING SECTION.

GUILFORD, WILLIAM MOORE, JR.,	Lebanon, Pa.
LEWIS, JOHN F. TAYLOR,	Broomall, Pa.
LONGSTRETH, EDWARD RHOADS,	Philadelphia, Pa.
SIMPSON, WILLIAM PERCY,	Overbrook, Pa.
WALTON, ERNEST FORSTER,	New York, N. Y.
BAILY, HENRY PAUL,	Philadelphia, Pa.
COFFIN, THOMAS AMORY,	Phoenixville, Pa.
FOX, ROBERT EASTBURN,	Bryn Mawr, Pa.
SHAW, JAMES GEORGE, JR.,	New Castle, Del.

SOPHOMORE CLASS.

CLASSICAL SECTION.

ALGER, HARRY,	Newport, R. I.
BLAIR, DAVID HUNT,	High Point, N. C.
CANBY, WILLIAM MARRIOTT, JR.,	Wilmington, Del.
MITCHELL, JACOB THOMAS,	Bellefonte, Pa.
TODD, HENRY A.,	Salem, Mass.

SCIENTIFIC SECTION.

COALE, CAREY,	Baltimore, Md.
HANDY, WILLIAM WINDER,	Baltimore, Md.
THOMAS, GEORGE,	Whitford, Pa.

ENGINEERING SECTION.

FULLER, GEORGE LLEWELLYN,	Catasauqua, Pa.
MEKEEL, DAVID LANE,	Underhill, N. Y.
WHITNEY, JOHN DRAYTON,	Bryn Mawr, Pa.

CRAWFORD, JOHN YOCUM,	Bryn Mawr, Pa.
RHOADS, JOSEPH HOWARD,	Philadelphia, Pa.
STRAWBRIDGE, ROBERT EARLY,	Germantown, Pa.
VALENTINE, EDWARD ABRAM,	Bellefonte, Pa.
VALENTINE, GEORGE,	Bellefonte, Pa.

FRESHMAN CLASS.

CLASSICAL SECTION.

PALEN, GILBERT J.,	Germantown, Pa.
PARRISH, FREDERIC MAXFIELD,	Philadelphia, Pa.
STONE, RALPH,	Warren, Pa.
WEST, NELSON L.,	Philadelphia, Pa.
YARNALL, STANLEY RHOADS,	Media, Pa.

SCIENTIFIC SECTION.

COLLINS, MINTURN POST,	Purchase, N. Y.
DACOSTA, JOHN C., JR.,	Philadelphia, Pa.
DAVIS, HENRY L., JR.,	Germantown, Pa.
HART, WALTER MORRIS,	Philadelphia, Pa.
HOFFMAN, MILES ATLEE,	Bryn Mawr, Pa.
MARTIN, R. LINWOOD,	Germantown, Pa.
MCALLISTER, FRANKLIN,	Ardmore, Pa.
MUIR, JOHN W.,	Philadelphia, Pa.
NICHOLSON, WILLIAM H., JR.,	Philadelphia, Pa.

ENGINEERING SECTION.

FIRTH, S. LLOYD,	Germantown, Pa.
HOOPES, ARTHUR,	West Chester, Pa.

BRINTON, CHRISTIAN F.,	Thornbury, Pa.
CROZER, EDWARD P.,	Upland, Pa.

SUMMARY.

Graduate Students,	3
Seniors,	25
Juniors,	27
Sophomores,	16
Freshmen,	18
	<hr/>
	89

ADMISSION.

CANDIDATES for admission to the Freshman Class in the COURSE IN ARTS AND SCIENCE will be examined as to their proficiency in the following requisites:

GREEK.—Grammar, scanning of hexameter verse; Xenophon's *Anabasis*, four books; Homer's *Iliad*, three books; Sight Reading from Xenophon and Homer; Jones's *Greek Composition*, twenty-five Exercises to be written with the accents.

LATIN.—Cæsar's *Gallic War*, four books; Vergil's *Æneid*, six books; Cicero, six orations. Sight reading from Cicero, Cæsar and Nepos. General questions on grammar, prosody, history and mythology suggested by the text. Translation of easy prose from English into Latin. Harkness, Parts I. and II., or Jones's Exercises will indicate the amount necessary.

NOTE.—Equivalentents in Greek and Latin will be accepted. Much importance will be attached to ability to read at sight matter not previously studied.

MATHEMATICS.—Arithmetic, including the Metric System; Algebra, through Radicals and Quadratic Equations of one unknown quantity; plane Geometry.

ENGLISH.—Grammar; a short English Composition, correct in spelling, punctuation and expression will be required. The subject will be drawn in 1889 from Carlyle's *Heroes and Hero-Worship*; Macaulay's *Essay on Warren Hastings*; Longfellow's *Golden Legend*; in 1890 from Scott's *Lady of the Lake*; Irving's *Bracebridge Hall*; Macaulay's *History of England*, Chapter III.; and in 1891 from Longfellow's *Evangeline*; Carlyle's *Essay on Sir Walter Scott*; Thackeray's *Four Georges*.

NOTE.—Other works of equal merit and extent will be accepted as equivalent.

HISTORY.—Greek, Roman, and United States History.

MODERN LANGUAGES.—In place of the Greek the candidate may offer *both* German and French as follows :

German.—A thorough knowledge of the Grammar ; ability to read at sight ordinary prose or poetry, and to translate English sentences into German. The minimum amount to be read may be indicated by Whitney's *German Reader*, Boisen's *German Prose*, Schiller's *Wilhelm Tell*, and a connected piece of prose like Storm's *Immensee* or Eichendorff's *Aus dem Leben eines Taugenichts*.

French.—Whitney's *Grammar*, Part I.; De Rougemont's *La France* (100 pp.); Knapp's *French Readings* (94 pp.); *Télémaque*, three books; *Athalie*.

NOTE.—Equivalents in German and French will be accepted.

Candidates for admission to the Freshman Class in the SCIENTIFIC OR ENGINEERING COURSE will be examined as follows :

LATIN.—As above.

MATHEMATICS.—As above, with the addition of the Theory and the Use of Logarithms.

ENGLISH.—As above .

HISTORY.—As above.

SCIENCE.—The elements of Physics and of Human Physiology.

MODERN LANGUAGES.—*Both* German and French, as outlined above, may be substituted for the Latin of this course.

The certificates of principals of first-class schools will be accepted in place of our examinations, so far as they cover the ground. Such teachers must fill up blank forms furnished on application. Certificates of private tutors will not be accepted.

Students not candidates for a degree may, at the discretion of the Faculty, be admitted to pursue special courses, for proficiency in which certificates may be granted ; but this permission will be given only to students of sufficient age, ability and diligence to insure their success.

Candidates may be admitted to advanced Classes if found on examination thoroughly fitted in all the regular studies of the Course up to the point at which they enter.

Each candidate must forward, together with his application, a certificate of good moral character from his last teacher ; and students from other colleges must present certificates of honorable dismissal in good standing.

APPLICATIONS FOR ADMISSION must be made to the President. Entry Blanks will be furnished on application. Rooms are assigned to old students in the order of seniority, and to new students in the order in which these entry-blanks, properly filled up, are received at the President's office. Candidates will present themselves at Founders' Hall, for examination by the Faculty, *at 9.30 o'clock on the morning previous to Commencement Day*, or *at 9.30 o'clock on the morning previous to the beginning of the College Year*.

EXPENSES.

WITH the exceptions noted in the two following paragraphs, the price of Board and Tuition for undergraduates in the College Halls (together with fuel, lights, furniture and service), is five hundred dollars (\$500) a year.

There are a few large rooms in Barclay Hall, each of which may be taken by one student at an increased cost of twenty-five dollars a year, or by two at a decreased cost to each of seventy-five dollars a year.

A few students will be taken in another building (see foot-note on page 6). The charge will be \$375 or \$425, depending on the accommodation.

The charge for Tuition is one hundred and fifty dollars (\$150) a year ; for Tuition and mid-day meal, two hundred dollars (\$200) a year.

The College Laundry charges seventy-five cents per dozen for washing.

Students furnish their own books and stationery, and are charged for materials consumed and breakage in the Laboratories.

The charge for Board and Tuition for Graduate Students is three hundred dollars (\$300) ; for Tuition alone, one hundred dollars (\$100).

Bills for Board and Tuition are payable one half at the beginning and one half at the middle of the College Year.

SCHOLARSHIPS.

A number of scholarships, varying in amount from \$100 to \$500, are at the disposal of the College.

These will be granted to properly qualified students who cannot afford to pay the full charges. In according the scholarships both character and intellectual preparation are taken into account. Students unknown to the Faculty should send, with their application, certificates of moral character. The intellectual preparation is tested by examination. Blank forms on which the application must be written will be furnished by the President of the College. Candidates are advised to apply at an early date.

FELLOWSHIPS.

The College has received a sum of money for the purpose of establishing four Graduate Fellowships, of the annual value of \$300 each,—the whole charge for Board and Tuition. By the conditions of the donors one of these will be given to a graduate of each of the following Colleges, viz.: Haverford, Earlham, Penn, and Wilmington; *Provided*, that the student shall be recommended by the President of the College at which he graduated as likely to profit by the instruction given at Haverford, and that he shall be satisfactory to the Faculty of Haverford College.

Should there not be satisfactory applications for these Fellowships by Fifth month 1st, they may be otherwise disposed of.

COURSES OF INSTRUCTION.

In the Course in Arts and Science, Latin and Mathematics are required through two years. Should the student present Greek for admission, he is required to continue it for two years, and take German and French for one year. Should he present German and French for admission, he is required to continue them for two years. All these subjects may be continued as electives. Some election is allowed in the Junior year. The Senior year is largely elective.

In the Scientific Course, Latin is required one year (unless the student presents German and French for admission), and Mathematics three years. Particular attention is given to the Modern Languages and the Sciences throughout the course. Electives may be taken as in the Course in Arts and Science.

In the Engineering Course, the Freshman year is nearly the same as in the Scientific Course. After this there is divergence, the Engineering students taking more Mathematics, Mechanics, Shop Work, and Drawing as required studies.

COURSE IN ARTS AND SCIENCE.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.
2. *Mathematics*. Sharpless's Geometry; Hall & Knight's Algebra. Five hours a week.
3. *Greek*. (See note below.) Demosthenes, *Philippics*, or an equivalent; Herodotus, *Selections*; Homer, *Selections*; Translations at sight; Sidgwick's Greek Composition. Four hours a week.
4. *Latin*. Livy (Chase); The Odes and Epodes of Horace (Chase); Review of Latin Grammar; Translations at sight (Cicero, *De Senectute* and *De Amicitia*); Prose Composition. Four hours a week.
5. *Rhetoric and English Composition*. Principles of Rhetoric (A. S. Hill); Readings in English Prose; Composition (exercises in the class-room); Themes. Two hours a week the first half, one the second.
6. *Hygiene and Descriptive Botany*. One hour a week the second half-year.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission, will take the elective studies in German and French.

SOPHOMORE CLASS.

1. *Scripture*. The Greek Testament, Luke's Gospel. One hour a week.
2. *Mathematics*. Wentworth's Plane and Spherical Trigonometry; Surveying, with Field Practice; Smith's Analytical Geometry. Three hours a week.
3. *Greek*. (See note below.) Homer continued; Plato, *Apology* and *Crito*, or *Phaedo*; Æschylus, *Prometheus*; Aristophanes, *Frogs*; Translation at sight. Dictation Exercises in writing Greek. Three hours a week.
4. *Latin*. The *Germania* and *Agricola* of Tacitus; Selections from the Latin Poets; Cicero's Letters; Translations at sight (Cornelius Nepos). Prose Composition. Three hours a week.
5. *English Literature*. History of English Literature; Readings in English Poetry; Themes. One hour a week.
6. *History*. Outlines of Ancient History; Mediæval History (Text-Book and Lectures). Two hours a week.
7. *Physics*. Gage's text-book, with Experimental Lectures; Laboratory Work. Four hours a week the first half-year.
8. *Chemistry*. General Inorganic Chemistry; Laboratory Work. Four hours a week the second half-year.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission to the Freshman Class will take elective courses in German and French.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. One hour a week.
2. *German*. (For those who have not studied the language.) Joynes-Meissner's Grammar; Niebuhr's *Heroengeschichten*; Boisen's Prose Extracts; Translations at sight; Exercises in translating English into German.
3. *French*. (For those who have not studied the language.) Whitney's Grammar, Part I.; De Rougemont's *La France*; Knapp's French Readings; Composition (Whitney's Grammar, Part II.)
4. *Political Science*. Political Economy; Principles of Constitutional Law (Text-Book and Lectures). Two hours a week the first half-year.
5. *History*. General History of Europe, or Renaissance and Reformation (Text-Book and Lectures). Two hours a week the second half-year.
6. *Philosophy*. Logic and Psychology. Two hours a week.
7. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on page 26 enough to make 16 hours per week with their required studies.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. One hour a week.
2. *Ethics*. Two hours a week.
3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on page 26 enough to make 16 hours per week with their required studies.

SCIENTIFIC COURSE.

FRESHMAN CLASS.

1. *Scripture*. General outline of the History and Literature of the Bible. One hour a week.

2. *Mathematics*. Sharpless's Geometry; Hall and Knight's Algebra; Wentworth's Trigonometry. Seven hours a week.

3. *Latin*. Livy (Chase); The Odes and Epodes of Horace (Chase); Review of Latin Grammar; Translations at sight (Cicero, *De Senectute* and *De Amicitia*); Prose Composition. Four hours a week.

NOTE.—Students presenting modern languages in place of Latin for admission, will substitute for the Latin of the Freshman year, French and German from the elective list on page 26.

4. *Rhetoric and English Composition*. Principles of Rhetoric (A. S. Hill) Readings in English Prose; Composition; (Exercises in the class room); Themes. Two hours a week the first half-year, one the second.

5. *Hygiene and Descriptive Botany*. One hour a week the second half-year.

6. *Drawing*. Five hours a week.

SOPHOMORE CLASS.

1. *Scripture*. Elements of the History of Israel; Luke's Gospel. One hour a week.

2. *Mathematics*. Wentworth's Plane and Spherical Trigonometry; Surveying with Field Practice. Smith's Analytical Geometry. Three hours a week.

3. *German*. Joynes-Meissner's Grammar; Niebuhr's *Heroengeschichten*; Boisen's Prose Extracts; Translations at sight; Exercises in translating English into German. Three hours a week.

4. *French*. Whitney's Grammar, Part I.; De Rougemont's *La France*; Knapp's *French Readings*; Composition (Whitney's Grammar, Part II.) Three hours a week.

5. *English Literature*. History of English Literature; Readings in English Poetry; Themes. One hour a week.

6. *History*. Outlines of Ancient History; Mediæval History (Text-Book and Lectures). Two hours a week.

7. *Physics*. Gage's Text-Book, with Experimental Lectures; Laboratory Work. Four hours a week the first half-year.

8. *Chemistry*. General Inorganic Chemistry; Laboratory Work. Four hours a week the second half-year.

9. *General Biology*. Lectures and Laboratory Work. Twice a week.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Teachings of Christ. One hour a week.
2. *Mathematics*. Differential and Integral Calculus. Three hours a week.
3. *German*. Lessing's *Minna Von Barnhelm*; Eichendorff's *Aus dem Leben eines Taugenichts*; Goethe's *Iphigenie*; Exercises in German Composition (based on Whitney's German Grammar.) Three hours a week.
4. *French*. Knapp's *French Readings*; *Télémaque*; *Athalie*; Composition (Whitney's Grammar Part II.); Lectures on the language and literature; Private Reading (Works will be suggested upon some of which examinations will be held.) Three hours a week.
5. *Political Science*. Political Economy; Principles of Constitutional Law; Text-Book and Lectures. Two hours a week the first half-year.
6. *History*. General History of Europe, or Renaissance and Reformation (Text-book and Lectures). Two hours a week the second half-year.
7. *Philosophy*. Logic and Psychology. Two hours a week.
8. *Chemistry*. Chemistry of the Compounds of Carbon. Two hours a week the first half-year,
9. *Physics*. Heat (Stewart). Two hours a week the second half-year.
10. *Themes*.

NOTE.—Students who have had two years in French and German may take studies from the elective list in their place.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Teachings of Christ. One hour a week.
2. *Ethics*. Two hours a week.
3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on page 26 enough to make 16 hours per week with their required studies.

MECHANICAL ENGINEERING COURSE.

In the first two years of the Engineering Course, the same work is required as in the Scientific Course, except that Shop Work and Mechanical Drawing take the place of History and Biology.

Students are advised to substitute French and German for the Latin of the Freshman year.

During the last two years students in Mechanical Engineering give their time to Mathematics, Shop Work, Drawing, study of the Materials of Engineering, the Theory of Constructions, and other special Engineering work.

Scripture and Themes are required through the four years, and a course in Ethics in the Senior year.

CHEMICAL AND ELECTRICAL COURSES.

Students may substitute for the last two years of the Scientific Course, a special course in Chemistry, embracing both theory and Laboratory Work. Qualitative and Quantitative Analysis may be thoroughly studied.

Students may substitute for the last two years of the Scientific Course, a special course in Electricity. This will include accurate electrical measurements; as for instance, comparison of electro-motive forces and resistances, the determination of current in absolute measure, etc., as well as study of the theory.

ELECTIVE COURSES.

Seniors and Juniors will elect, with the approbation of the Faculty, sufficient to make up the required number of hours.

The small figures indicate the number of hours per week.

1. *Hebrew*.³ Grammar. Old Testament. Reading.
2. *Greek I*.³ Selections from the Greek orators; Æschylus; Pindar; Studies in Greek art and antiquities.
3. *Greek II*.³ Sophocles; Thucydides; Extemporalia; Dictation exercises in writing Greek.
4. *Latin I*.³ *Ars Poetica*; *Satires* of Juvenal; Selections from Suetonius and Tacitus (Annals and History); *Trinummus* of Plautus.
5. *Latin II*.³ Selections from Cicero's Philosophical Works; Pliny's *Letters*; *Bucolics*; Terence (2 hours); History of Latin Literature; Topography of Italy and Rome, with map drawing, or private reading of Pliny (1 hour).
6. *English I*.² Lectures on Elizabethan Poetry; Shakespeare's *King Lear*; Milton's Minor Poems and *Areopagitica*; Private Readings.
7. *English II*.² Specimens of English Literature from Dryden to Wordsworth; Lectures; Private Readings.
8. *English III*.² Sweet's Anglo-Saxon Reader; Selections from Early English Literature; Lectures on the English Language.
- English IV*.² Chaucer's *Canterbury Tales*; Langland's *Piers Plowman*; Lectures on English Literature in the Fourteenth Century.
- English I. will be omitted in 1889-90.
- German I*.³ Gutzkow's *Zopf und Schwert*; Selections from Goethe; Lectures on the History of German Literature; Private Readings; Exercises in German Composition.
- German II*.³ Lessing's *Minna von Barnhelm*; Eichendorff's *Aus dem Leben eines Taugenichts*; Goethe's *Iphigenie*; Exercises in German Composition, based on Whitney's German Grammar.
- French I*.³ Daudet's *Contes*; Corneille's *Le Cid*; Moliere's *Le Mis-anthrope*, Hugo's *Hernani*; Exercises in Composition and Idioms; Lectures on the Language and Literature; Private Reading. (Works will be suggested upon some of which examinations will be held.)
- French II*.³ Knapp's *French Readings*; *Télémaque*; *Athalie*; Composition (Whitney's Grammar, Part II.) Lectures on the Language and Literature. Private Reading. (Works will be suggested, upon some of which examinations will be held.)
- Mathematics I*.³ Mechanics or Mathematical Physics.
- Mathematics II*.³ Advanced Calculus or Dynamics.
- Mathematics III*.³ Elementary Calculus.
- Astronomy I*.² Practical Astronomy with Observatory Practice.
- Astronomy II*.² (Half-year.) Descriptive Astronomy.

*History I.*³ Political and Constitutional History of England, Selected periods.

*History II.*³ American Colonial History; Europe and America in the Eighteenth Century.

*History III.*³ Political and Constitutional History of the United States.

But one of these three courses in History will be given in 1889-90.

*Chemistry*² or ⁴. Qualitative or Quantitative Analysis. Advanced Experimental Work.

*Biology I.*² Invertebrate Zoology and Embryology.

*Biology II.*² Vertebrate Anatomy and History.

But one of the courses Biology I. and II. will be given in 1889-90.

*Biology III.*² General Biology; Lectures and Laboratory Work.

*Geology.*² (Half-year.) Elementary Geology.

*Engineering.*² Materials of Construction; Theory of the Steam Engine.

*Physics I.*² Physical Optics and Electricity; Lectures and Laboratory Work.

*Physics II.*² Theory of Heat and Electricity; Laboratory Work.

LECTURES.

The Lectures and Courses of Lectures to the whole college for the year 1887-8 were as follows :

<i>Peace and Arbitration</i>	WILLIAM JONES.
<i>Home Rule</i>	} JOHN STUART.
<i>India</i>	
<i>How to Read History</i>	THOS. WENTWORTH HIGGINSON.
<i>A Summer in Alaska</i>	WILLIAM RIGHTER FISHER.
<i>Our Bodies—How to Develop them</i>	WILLIAM BLAIKIE.
<i>The History of Assyrian Discovery and Decipherment</i>	} PROFESSOR ROGERS.
<i>The Results of Assyrian Investigation Chiefly as Affecting the Old Testament</i>	
<i>What to Read and How to Read it</i>	} DR. JOSEPH THOMAS.
<i>The Discovery of the West Indies</i>	} DR. McMURRICH.
<i>The History of the Bahamas</i>	
<i>The Interpreting Power of Delivery, with Illustrative Readings</i>	} PROF. J. W. CHURCHILL.
<i>Physical Training—Its Nature and Place</i>	} DR. EDW. W. HARTWELL.
<i>The Hygiene of Diet</i>	DR. HENRY HARTSHORNE.
<i>Political Duties of Young Men</i>	THOMAS LEAMING.

GRADING OF STUDENTS.

Students are divided, according to their grades, into five sections, A, B, C, D, E. Each student is notified of the section to which he has been assigned, but the grades are not published. Section E is composed of those who cannot be advanced to the next higher class, nor receive their Bachelor's degree. Daily recitations, hour examinations, and final examinations are all used as elements in determining the standing of a student.

ADVANCED DEGREES.

BACHELORS OF ARTS, BACHELORS OF SCIENCE, and BACHELORS OF ENGINEERING of three years' standing may take the degrees of MASTER OF ARTS, MASTER OF SCIENCE, or MECHANICAL or CIVIL ENGINEER on submitting to the Executive Committee satisfactory evidence of continued good moral character, and passing an examination on some literary or scientific course of study, which shall receive the approbation of the Faculty and Managers.

The following are stated as adequate courses of study to be presented by candidates for the second degree. Particulars can be had on application to the President.

I. Hebrew. Mitchell's Gesenius' Hebrew Grammar. Critical and philological reading and analysis of I. and II. Samuel; I. and II. Kings. Sight reading of Genesis, unpointed (edition of Muehlau et Kautzsch, Lipsiæ, 1885.)

II. Assyrian. Lyon's Assyrian Manual. Friedrich Delitzsch's Assyrische Lesestücke. Syllabare (Sb. Sc.) S. 53-75. Neuassyrische Texte, (S. 110, 4-121.)

III. The whole of the New Testament in Greek, with Winer's or Buttmann's N. T. Grammar, Thayer's Lexicon, the introductions to N. T. of Scrivener and of Hort.

IV. The whole of Thucydides, together with Grote and Curtius on the Peloponnesian War; Greek composition.

V. Twelve Tragedies of Æschylus, Sophocles, or Euripides; Greek composition.

VI. Cicero's Tusculan Disputations (five books), De Natura Deorum and De Officiis, together with the History of Ancient Philosophy; Latin composition.

VII. The whole of Tacitus, together with Merivale; Pliny's Letters; Latin composition.

VIII. German Literature, with translation at sight from any of the leading authors, and a short essay in German.

IX. French Literature, with translation at sight from any of the leading authors, and a short essay in French.

X. Greek Literature, with translation at sight from any of the leading authors, and a short original essay in Greek.

XI. Latin Literature, with translation at sight from any of the leading authors, and an original essay in Latin.

XII. Pure Mathematics. Two subjects from Elliptical Functions; Higher Plane Curves, Theory of Invariants and Covariants.

XIII. Applied Mathematics. Two subjects from Hydrostatics; Attractions and Potentials; Rigid Dynamics; Hydrodynamics.

XV. Theoretical Astronomy (Computation of an Orbit---Oppolzer).

XVI. Practical Astronomy (Doolittle and Chauvenet); Observatory Work.

XVII. Rankine's Applied Mechanics, or Rankine's Civil Engineering.

XVIII. European History; Political, Constitutional, Literary.

XIX. American History; Political, Constitutional, Literary.

XX. Ecclesiastical History. A general knowledge of the leading facts in Early Church History and an acquaintance with Greek and Latin will be required; a special subject may be selected from the following:

a. The writings of Barnabas and Justin and the Teaching of the Twelve Apostles.

b. The Clementine and Ignatian Epistles.

c. The development of Christian Institutions; (Stanley, Hatch, etc.)

d. The Ecclesiastical History of Eusebius.

XXI. Germanic Philology and Literature. (One of the following to be selected):

a. *Anglo-Saxon*.—Grein's *Bibliothek der angelsächsischen Poesie*; Sweet's Edition (Early English Text Society) of the Anglo-Saxon Version of the *Cura Pastoralis*; Cook's Sievers' Anglo-Saxon Grammar. A knowledge of Gothic Grammar is required in this as in the next course.

b. *Middle High German*.—*Das Nibelungenlied*; Walther von der Vogelweide; *Gudrun*; History of Early German Literature; Old High German Grammar.

c. *Old Norse*. A course similar to a and b can be arranged in Old Norse literature and philology.

XXII. English Literature. An intimate acquaintance with the authors of some characteristic epoch will be required, and a good English style, manifested in original essays.

XXIII. Physics. Any two of the following, with Laboratory work. Mechanics (Sturm); Fluid Motion (Lamb); Optics (Verdét); Thermodynamics (Clau-sius); Electricity and Magnetism (part of Mascart and Joubert.)

XXIV. Chemistry.

XXV. Political Economy.

XXVI. Zoology.

XXVII. Botany.

} • Courses in these subjects can best be
} arranged by consultation with the Professor
} in charge of the department.

Candidates who are examined may also, if they desire, hand in Dissertations on topics in the field of study which they have specially investigated.

Resident Graduates, who have completed an adequate course of study, may be admitted to an examination for a second degree before the expiration of three years, if the Faculty deem it proper.

Graduates of other Colleges and Scientific Schools of good standing, who present satisfactory evidence of character and qualifications, will be admitted as candidates for the degree of Master of Arts. One

year's residence at Haverford College will be required of all such students.

Masters of Arts and Science may be examined for the degrees of DOCTOR OF PHILOSOPHY and DOCTOR OF SCIENCE; but such degrees will be conferred only after satisfactory proof of the faithful and successful prosecution of courses of study fully equal in extent and quality to those required for similar honors in the best Universities.

Notice of application for examination must be given to the President two months before Commencement. The examinations will be held the last week in the Fifth month, and no later. The fee for the Diploma of the Second Degree is Twenty Dollars, of subsequent degrees, Thirty Dollars, to be paid in all cases before the 10th of the Sixth month.

ALUMNI PRIZE FOR COMPOSITION AND ORATORY.

The Association of the Alumni, in the year 1875, established an ANNUAL PRIZE of a Gold Medal, or of a Bronze Medal and Books of equal value, for excellence in Composition and Oratory.

The prize was awarded last year to HOWELL S. ENGLAND, of the class of 1888, for his Oration on "The Sphere of the Imagination."

The following are the Rules governing the competition :

I. The Alumni Medal is offered yearly to the competition of the members of the Senior and Junior Classes, as a prize for the best delivered oration prepared therefor.

II. Three or five Judges shall be appointed from year to year by the Alumni Committee, who shall, on the evening of the last Sixth-day in the Fifth month, hear publicly, in Alumni Hall, all competitors who may be qualified to appear.

III. No oration shall occupy in delivery more than fifteen minutes.

IV. In making their award, while due weight is given to the literary merits of the oration, the Judges are to consider the prizes as offered to encourage more especially the attainment of excellence in elocution.

V. The Judges shall have the right to withhold the prize, if the elocution and the literary merits of the oration fall below a suitable standard of excellence.

LIBRARY.

LIBRARIAN, Professor Allen C. Thomas; Albert J. Edmunds, *Assistant*.

THE number of bound volumes in the library of Haverford College is 17,451. Numerous American and European periodicals, scientific and literary, are taken by the Library.

The income of a fund of ten thousand dollars is devoted annually to the increase of the Library.

The Library is open as a reading-room from 9 A. M. to 6 P. M., during which time the volumes in the alcoves may be freely consulted. The Librarian devotes stated hours each week to the purpose of assisting and directing students in their reading, and in the skilful use of books of reference and consulting of authorities. He also arranges courses of reading.

A CARD CATALOGUE shows at once what books, essays or review articles the Library possesses on any subject, and where they may be found.

MUSEUM.

CURATOR, Professor J. P. McMurrich.

THE MINERALOGICAL CABINET contains over 3,000 specimens, and the GEOLOGICAL about 5,000. There are also collections of FOSSILS and SHELLS; a valuable collection of BIRDS and BIRDS' EGGS; a number of Ward's CASTS of fossil species; an HERBARIUM illustrating the Flora of the vicinity; and a large number of Zoological specimens other than Birds and Shells.

CHEMICAL LABORATORY.

DIRECTOR, Professor Lyman B. Hall.

The Laboratory work comprises qualitative and quantitative analysis, the preparation of pure compounds, and experimental work illustrative of chemical theories.

Opportunity is afforded for elementary or advanced special work, with ample facilities for its prosecution.

BIOLOGICAL LABORATORY.

DIRECTOR, Professor J. P. McMurrich.

This laboratory is furnished with a number of Microscopes for students' use, a set of Auzoux's Clastic Models, Kny and Dodel-Port's Botanical Diagrams, Leuckart and Nitschse's Zoological Charts, and other necessary apparatus for Biological investigation.

PHYSICAL LABORATORY.

DIRECTOR, Dr. Henry Crew.

The Physical Laboratory occupies five medium-sized rooms, and is fairly well equipped for work in the various departments of physics, especially in electrical measurements.

It affords facilities for special undergraduate work.

The students are assigned work in the accurate measurement of various physical quantities in mechanics, heat, light and electricity.

THE MACHINE SHOP.

DIRECTOR, Professor Levi T. Edwards.

The MACHINE SHOP is equipped with all the tools necessary for instruction in carpenters' and machinists' work, including hand and machine lathes, planer, shaper, drill press, forge, vises, etc., with a 10 horse-power steam-engine and boiler.

The work in the shop is conducted by means of progressive exercises, combining the principles met with in machine construction.

The students, under the care of the Director, will be taken to visits machine shops and engineering constructions in Philadelphia and its vicinity.

ASTRONOMICAL OBSERVATORY.

DIRECTOR, Professor F. P. Leavenworth.

The HAVERFORD OBSERVATORY affords the students the means of becoming familiar with the use of astronomical instruments, and of acquiring, from actual observation, a practical acquaintance with Astronomy.

It contains two Equatorial Telescopes, one by Clark, having an object-glass 10 inches in diameter, and one with an object-glass of $8\frac{1}{4}$ inches, with filar micrometer, and eye-pieces; a polarizing eye-piece; a Newtonian Reflector, with a silver-on-glass speculum of $8\frac{1}{4}$ inches diameter; a Prism Spectroscope; a Meridian Transit Circle, having a Telescope of 4 inches aperture, with a circle at each end of the axis 26 inches in diameter; a Zenith Instrument of $1\frac{3}{4}$ inches aperture, with a micrometer; two Sidereal Clocks, one with mercurial compensation, the other used to connect with a Bond's Magnetic Chronograph.

The latitude of the observatory is $40^{\circ} 0' 40''$ N.; its longitude, $6' 59.4''$ East from Washington.

A Special Course in Astronomy is offered to Amateurs and Teachers. The requisites for the Course and the fees charged will depend on the work which the applicant desires to perform.

•

THE GYMNASIUM.

DIRECTOR, Dr. W. A. Ford.

The GYMNASIUM was refitted in 1881 with the apparatus of Dr. D. A. Sargent, Director of the Hemenway Gymnasium of Harvard University. A competent teacher, a graduate of Jefferson Medical College and a pupil of Dr. Sargent, has direction of it, and gives systematic instruction, based upon careful personal examination, to each student desiring such aid. Examinations and regular work in the Gymnasium are required of all members of the Sophomore and Freshman Classes.

SOCIETIES.

The LOGANIAN SOCIETY was established by the Officers and Students in 1834.

The EVERETT-ATHENÆUM is a literary society of the students.

DEGREES GRANTED IN 1888.

At the Commencement in 1888 Degrees were granted in course to the following graduates :

BACHELORS OF ARTS.

E. MORRIS COX,
HOWELL STROUD ENGLAND,
ALLISON WING SLOCUM,
MARTIN BELL STUBBS.

BACHELORS OF SCIENCE.

CHARLES HEATON BATTEY, *
JOHN COWGILL CORBIT, JR.,
MORRIS EVANS LEEDS,
HENRY VOLKMAR GUMMERE,
FRANCIS COPE HARTSHORNE,
JOSEPH TATUM HILLES,
WILLIAM DRAPER LEWIS,
GEORGE BRINTON ROBERTS,
JOSEPH WEBSTER SHARP.

BACHELORS OF ENGINEERING.

LAWRENCE PETERSON BEIDELMAN,
JOSEPH ESREY JOHNSON, JR.,
FREDERIC WISTAR MORRIS, JR.

MASTER OF ARTS.

THOMAS JESSE BATTEY, of the Class of 1863.

DOCTOR OF LAWS.

The degree of DOCTOR OF LAWS was bestowed *honoris causa* upon

CLEMENT LAWRENCE SMITH, A. M., of the Class of 1860.

CATALOGUE

OF

HAVERFORD COLLEGE

(HAVERFORD COLLEGE P. O., PA.)

1889-90.



Philadelphia :

PRESS OF FERRIS BROTHERS

SIXTH AND ARCH STREETS

CALENDAR.

College Year * 1889-90 began	9th Mo. 25
Winter Recess begins,	12th Mo. 21
Winter Term begins, 1890, *	1st Mo. 3
Mid-year Examinations begin,	1st Mo. 25
Second Half-year begins,	2d Mo. 1
Junior Exercises,	4th Mo. 17
Spring Recess begins,	4th Mo. 18
Spring Term begins *	4th Mo. 29
Alumni Prize Oration,	5th Mo. 30
Alumni Meeting,	6th Mo. 23
Examinations for Admission, 9.30 A. M.,	6th Mo. 23
Commencement Day, 1890,	6th Mo. 24

VACATION OF THIRTEEN WEEKS.

Examinations for Admission, 9.30 A. M.,	9th Mo. 23
College Year 1890-91 begins, *	9th Mo. 24
Winter Recess begins,	12th Mo. 20
Winter Term begins, 1890, *	1st Mo. 3
Second Half-year begins, 1891,	2d Mo. 2
Spring Recess begins,	4th Mo. 17
Commencement Day, 1891,	9th Mo. 23

* The first recitations are due promptly at *half-past nine o'clock*, at the beginning of each Term. No absences from them are excused, unless clearly unavoidable.

CONTENTS.

Calendar,	2
History and Description,	4
Corporation,	8
Faculty,	9
Graduate Students,	11
Seniors,	13
Juniors,	14
Sophomores,	15
Freshmen,	16
Summary,	17
Admission,	18
Expenses,	20
Scholarships,	21
Fellowships,	21
Courses of Instruction,	22
Course in Arts and Science,	23
Scientific Course,	25
Mechanical Engineering Course,	27
Chemical and Electrical Courses,	27
Elective Courses,	28
Lectures,	31
Grading of Students,	31
Advanced Degrees,	32
Alumni Prize,	35
Library,	36
Museum,	36
Chemical Laboratory,	37
Biological Laboratory,	37
Physical Laboratory,	37
Machine Shop,	38
Astronomical Observatory,	38
Gymnasium,	39
Literary Societies,	39
Degrees granted in 1889,	40

HISTORY AND DESCRIPTION.

IN the spring of 1830, a meeting of a few Friends in Philadelphia, shortly followed by a similar meeting in New York, originated Haverford School. The joint committee expressed the object of the effort as follows: "The members of the Society of Friends, having hitherto labored under great disadvantages in obtaining for their children a guarded education in the higher branches of learning, combining the requisite literary instruction with a religious care over the morals and manners of the scholars, . . . and carefully preserving them from the influence of corrupt principles and evil communications, it is therefore proposed that an institution be established in which the children of Friends shall receive a liberal education in ancient and modern literature, and the mathematical and other sciences."

The \$40,000 supposed to be necessary was raised without effort, and the Committee went out to seek a location. They say: "We wished to procure a farm in a neighborhood of unquestioned salubrity—within a short distance of a Friends' meeting—of easy access from this city at all seasons of the year, . . . and that was recommended by the beauty of the scenery and retired situation." Then they go on to say, that of the many places presented to them the only one which combined all the advantages was one of 198½ acres (since increased to 215), "near the eight-mile stone on the Lancaster Turnpike." They explain the present and prospective merits of the farm, the beauty of the natural woods, the unfailing springs of purest water, the nearness to the new Pennsylvania Railroad, in words which the succeeding half-century has amply justified.

On the 28th of Tenth Month, 1833, the school opened with 21 students. Provision had been made for three teachers and a superintendent.

"A Teacher of Ancient Languages and Ancient Literature.

"A Teacher of English Literature and of Mental and Moral Philosophy.

"A Teacher of Mathematics and Natural Science."

The Superintendent was to have charge of the order and domestic economy of the family.

The regulations of the new school were rigid. The bounds and time of the boys were very strictly marked out. All the details of the daily programme were arranged with great care; and if the elaborate provision of a number of wise men for the normal growth of students could convert boys into perfect men, the students of Haverford of fifty years ago had every advantage.

The High School thus established grew rapidly into prosperity and debt. The charges were low, the teachers were liberally paid, and the years which followed were marked by a constant endeavor to produce a maximum of good fruits from very limited funds. The deficiencies were made up in a liberal spirit, and a constant growth maintained by frequent subscriptions. All the time the school was justifying the effort by the quality of its results, and making for itself an increasing number of friends.

One of the first acts of the Committee, after the absolute necessities of the school were provided for, was to construct a gymnasium, and make arrangements for systematical physical work. They were determined that the advantage gained by the salubrity of the surroundings should not be lost for want of exercise. Under their care the lawn was graded at great expense, and foreign and native trees set out, with the design to make it a great arboretum. Cricket was introduced, a game not known elsewhere in America, and has always flourished since. A greenhouse and flower garden were established and maintained for twenty years by the work of the boys. The ideas that have done harm elsewhere, that schools were places for mental development only, had no foothold here, but morals, muscle and senses received their due share of culture.

In 1845 a temporary suspension was decreed, to allow the funds to accumulate, and give time for the collection of an endowment, which suspension lasted for three years. In 1852 the observatory was built, and supplied with an 8-inch equatorial and 4-inch transit. In 1856 the school was changed to a college, and authorized by the Legislature to grant degrees, but previous to this time the course had been as extended as in many colleges. It was still hampered with a large preparatory department, which was not abolished till 1861. In 1863 Alumni Hall and Library were built. In 1876-7, Barclay Hall, containing private dormitories and study-rooms, was erected, at a cost of

\$82,000, which was collected by subscription. The Chemical Laboratories were perfected in 1878. The new Observatory was built in 1883, the Machine Shop established in 1884, the Biological Laboratory in 1886, and the Physical Laboratory in 1888. Chase Hall, for lecture and recitation rooms, was built in 1888.

During this time Haverford had developed into a fully organized college. Many rules, adapted to boys of a boarding-school age, had been modified or abandoned, though enough of restraint was retained to provide against demoralization. The standard of admission was raised. Students of any denomination were admitted, though Friends still retained the general control. The number of teachers was increased five-fold. By various donations and bequests the endowment fund was enlarged. The annual charge was increased from \$200 to \$500,* which still fails to represent what the college has to pay for professors' salaries and board and care of students. Retaining the old idea of a "guarded education" and "a religious care over morals and manners," the college has sought to effect these results, and has measurably succeeded, rather by appeals to Christian principle and manliness than by arbitrary power.

In Barclay Hall, the hall of residence, two students occupy a study-room, and each has his private adjoining bed-room. A few single rooms are also provided. Recitation-rooms, laboratories, and dining-room are in Founders' Hall. The library and observatory are in separate buildings near by. Some of the professors live in the halls with the students and others have cottages on the grounds.

The college has a remarkably pleasant and healthful location in the township of Haverford, Delaware County,† Pa., nine miles west of Philadelphia, on the Pennsylvania Railroad. The buildings are surrounded by grounds of about sixty acres, tastefully laid out, and adorned with well-kept lawns, and a great variety of trees and shrubbery. These grounds comprise excellent fields for cricket, base-ball, foot-ball, tennis and other field games, a running and bicycle track, and a pond for skating.

The courses of study are designed to give a liberal education. Their scope will be seen on the following pages. Religious instruction

* The price may vary, depending on the situation of the room, from \$375 to \$525. Most of the rooms involve a payment of \$500.

† Haverford College *Post-Office* is in Montgomery County.

is carefully provided. In addition to the daily reading of the Holy Scriptures, recitations in the English or Greek New Testament or in Scripture History are required of the student once a week. By exposition and collateral information the instructors endeavor to enforce the true meaning of the lessons. Haverford College desires to inculcate the simple truths of the Christian religion.

CORPORATION.

President,

WISTAR MORRIS,

209 S. Third Street, Philadelphia.

Secretary,

ELLISTON P. MORRIS,

21 North Seventh Street, Philadelphia.

Treasurer,

ASA S. WING,

409 Chestnut Street, Philadelphia.

MANAGERS.

WISTAR MORRIS,
T. WISTAR BROWN,
JAMES WHITALL,
JAMES CAREY THOMAS,
PHILIP C. GARRETT,
RICHARD CADBURY,
DAVID SCULL,
RICHARD WOOD,
ROBERT B. HAINES,
FRANCIS T. KING,
WILLIAM R. THURSTON,
CHARLES HARTSHORNE,
JOHN B. GARRETT,

EDWARD BETTLE, JR.,
CHARLES ROBERTS,
FRANCIS WHITE,
BENJAMIN H. SHOEMAKER,
HOWARD COMFORT,
WILLIAM S. TAYLOR,
JUSTUS C. STRAWBRIDGE,
ASA S. WING,
ELLISTON P. MORRIS,
FRANCIS STOKES,
JAMES WOOD,
ABRAM F. HUSTON,
J. PRESTON THOMAS,

WILLIAM H. HAINES.

Secretary of the Board,

HOWARD COMFORT,

529 Arch Street, Philadelphia.

Executive Committee.

EDWARD BETTLE, JR.,
JAMES WHITALL,
DAVID SCULL,
PHILIP C. GARRETT,
CHARLES ROBERTS,

JOHN B. GARRETT,
JUSTUS C. STRAWBRIDGE,
HOWARD COMFORT,
ASA S. WING,
RICHARD WOOD.

FACULTY.*

ISAAC SHARPLESS, Sc.D., LL.D., PRESIDENT,
and Professor of Ethics.

ALLEN C. THOMAS, A.M., LIBRARIAN,
and Professor of History and Political Science.

LYMAN BEECHER HALL, Ph.D.,
John Farnum Professor of Chemistry.

SETH K. GIFFORD, A.M.,
Professor of Greek.

JAMES RENDEL HARRIS, A.M.,
Professor of Bible Languages and Ecclesiastical History.

MYRON R. SANFORD, A.M., REGISTRAR,
and Professor of Latin.

LEVI T. EDWARDS, A.M.,
Professor of Mechanical Engineering.

WILLIAM COFFIN LADD, A.M.,
Professor of French.

FRANCIS B. GUMMERE, Ph.D.,
Professor of English and German.

FRANK MORLEY, A.M.,
Professor of Mathematics.

* Arranged primarily as Professors, Instructors, etc., secondarily in the order of appointment.

HAVERFORD COLLEGE.

FRANCIS P. LEAVENWORTH, A.M.,

Director of the Observatory.

HENRY CREW, PH.D.,

Instructor in Physics.

WINFIELD SCOTT HALL, M.S., M.D.,

*Instructor in Biology (David Scull Foundation). Instructor in
Physical Training.*

JOHN H. BECHTEL,

Instructor in Elocution.

ALLISON WING SLOCUM, A.M.,

Secretary of the College.

FRANK WARRINGTON PEIRSON, A.B.,

Assistant in the Library.

GRADUATE STUDENTS.

BURR, CHARLES HENRY, JR., A.B. (Haverford, 1889), Philadelphia, Pa.
Haverford Fellow.
Major Subject—English.

DUNTON, WILLIAM ROSS, S.B. (Haverford, 1889),
Germantown, Pa.
Major Subject—English.

EATON, WILLIAM BRADFORD, PH.B. (Wesleyan, 1889),
Haverford College, Pa.
Major Subject—Biology.

ENGLAND, HOWELL STROUD, A.B. (Haverford, 1888),
Wilmington, Del.
Major Subject—English.

JONES, ARTHUR WINSLOW, A.B. (Haverford, 1885),
So. China, Me.
Major Subject—Greek.

LEEDS, ARTHUR NEWLIN, S.B. (Haverford, 1889),
Philadelphia, Pa.
Major Subject—English.

MICHENER, CHARLES LEROY, A.B. (Penn, 1884), A.M. (Penn, 1887),
New Sharon, Ia.
Penn Fellow.
Major Subject—Greek.

PEIRSON, FRANK WARRINGTON, A.B. (Haverford, 1889),
Lockport, N. Y.
Major Subject—English.

PRITCHARD, CHARLES EDGAR, A.B. (Earlham, 1889),
Georgetown, Ill.

Earlham Fellow.
Major Subject—Mathematics.

RAVENEL, SAMUEL PRIOLEAU, A.B. (Haverford, 1889),
Charleston, S. C.

Major Subject—English.

SAYRS, WILLIAM CHRISTOPHER, A.B. (Wilmington, 1889),
Wilmington, O.

Major Subject—Greek.

SLOCUM, ALLISON WING, A.B. (Haverford, 1888), A.M.
(Haverford, 1889), Dartmouth, Mass.

Major Subject—Physics.

TERRELL, CHARLES ERNEST, S.B. (Wilmington, 1888),
New Vienna, O.

Wilmington Fellow.
Major Subject—American History.

THOMPSON, FRANK EARLE, S.B. (Haverford, 1889),
Little Rock, Ark.

Haverford Fellow.
Major Subject—Chemistry.

THURBER, CHARLES HERBERT, Ph.B. (Cornell, 1886),
Haverford College, Pa.

Major Subject—American History.

VAIL, FREDERICK NEILSON, A.B. (Haverford, 1889),
Los Angeles, Cal.

Major Subject—English.

SENIOR CLASS.

CLASSICAL SECTION.

ANGELL, EDWARD MOTT,	South Glens Falls, N. Y.
AUCHINCLOSS, JAMES STUART,	Bryn Mawr, Pa.
AUDENRIED, WILLIAM GRATTAN, JR.,	Chestnut Hill, Pa.
BRINGHURST, HENRY RYAN, JR.,	Wilmington, Del.
COTTRELL, CHARLES THURSTON,	Jamestown, R. I.
DAVIES, GUY HULETT,	Towanda, Pa.
GILBERT, HENRY LEE,	Philadelphia, Pa.
JENKINS, WILLIAM GRANT,	Wilmington, O.
KIRKBRIDE, THOMAS STORY,	Philadelphia, Pa.
STEERE, JONATHAN MOWRY,	Burrillville, R. I.
TATNALL, ROBERT RICHARDSON,	Wilmington, Del.

SCIENTIFIC SECTION.

DARLINGTON, PERCY SMEDLEY,	West Chester, Pa.
GUSS, JOHN NOBLE,	West Chester, Pa.
HALEY, EDWIN JAMES,	West Chester, Pa.
HIBBERD, DILWORTH P.,	Malvern, Pa.
TEVIS, ALFRED COLLINS,	Haverford College, Pa.

ENGINEERING SECTION.

LEWIS, JOHN F. TAYLOR,	Broomall, Pa.
LONGSTRETH, EDWARD RHOADS,	Philadelphia, Pa.
SIMPSON, WILLIAM PERCY,	Overbrook, Pa.
WALTON, ERNEST FORSTER,	New York, N. Y.

BAILY, HENRY PAUL,	Philadelphia, Pa.
COFFIN, THOMAS AMORY,	Phoenixville, Pa.
FOX, ROBERT EASTBURN,	Bryn Mawr, Pa.
GUILFORD, WILLIAM MOORE, JR.,	Lebanon, Pa.

JUNIOR CLASS.

CLASSICAL SECTION.

ALGER, HARRY, Newport, R. I.
TODD, HENRY ARNOLD, Salem, Mass.

SCIENTIFIC SECTION.

HUTTON, JOHN WETHERILL, Westtown, Pa.
MORRIS, JOHN STOKES, Germantown, Pa.

ENGINEERING SECTION.

HANDY, WILLIAM WINDER, Baltimore Md.
MEKEEL, DAVID LANE, Yorktown Heights, N. Y.
THOMAS, GEORGE, Whitford, Pa.

BLAIR, DAVID HUNT, High Point, N. C.
FULLER, GEORGE LLEWELLYN, Catasauqua, Pa.
MITCHELL, JACOB THOMAS, Bellefonte, Pa.
RHODS, JOSEPH HOWARD, Philadelphia, Pa.
WHITNEY, JOHN DRAYTON, Bryn Mawr, Pa.

SOPHOMORE CLASS.

CLASSICAL SECTION.

BRUMBAUGH, I. HARVEY,	Huntingdon, Pa.
CADBURY, BENJAMIN,	Philadelphia, Pa.
DENNIS, JOSEPH HENRY,	Dover, N. H.
HALL, RUFUS HACKER,	Boston, Mass.
STONE, RALPH WARREN,	Warren, Pa.
WEST, NELSON LEFLIN,	Philadelphia, Pa.
YARNALL, STANLEY RHOADS,	Media, Pa.

SCIENTIFIC SECTION.

COLLINS, MINTURN POST,	Purchase, N.Y.
DETWILER, WARREN,	Ironbridge, Pa.
JENKS, WILLIAM PEARSON,	Philadelphia, Pa.
MCALLISTER, FRANKLIN,	Philadelphia, Pa.
MUIR, JOHN WALLINGFORD,	Philadelphia, Pa.
SHIPLEY, WILLIAM ELLIS,	Cincinnati, O.
STRAWBRIDGE, ROBERT EARLY,	Germantown, Pa.

ENGINEERING SECTION.

FIRTH, S. LLOYD,	Germantown, Pa.
HOOPES, ARTHUR,	West Chester, Pa.
WOOD, JOSEPH REMINGTON,	Flushing, N.Y.

BRINTON, CHRISTIAN FREDERICK,	Thornbury, Pa.
DAVIS, HENRY LAMONT, JR.,	Germantown, Pa.
GRISWOLD, FRANK TRACY,	Philadelphia, Pa.
HART, WALTER MORRIS,	Philadelphia, Pa.
HOFFMAN, MILES ATLEE,	Bryn Mawr, Pa.
MARTIN, R. LINWOOD,	Germantown, Pa.
NICHOLSON, WILLIAM HOPKINS, JR.,	Philadelphia, Pa.
PALEN, GILBERT JOSEPH,	Germantown, Pa.
PARRISH, FREDERICK MAXFIELD,	Philadelphia, Pa.
WESTCOTT, HARRY MACKMANN,	Richmond, Ind.

FRESHMAN CLASS.

CLASSICAL SECTION.

BAILEY, LESLIE ADELBERT,	Dresden, Me.
BROWN, JOHN FARNUM,	Villa Nova, Pa.
CROWTHER, WILLIAM MORTIMORE, . . .	Philadelphia, Pa.
ESTES, WILBUR ALBERT,	Sprague's Mills, Me.
GATES, THOMAS SOVEREIGN,	Germantown, Pa.
HAUGHTON, JOHN PAUL,	Bryn Mawr, Pa.
HAVILAND, WALTER WINCHIP,	Glens Falls, N.Y.
JACOBS, CARROL BRINTON,	West Chester, Pa.
JONES, GEORGE LINDLEY,	Amesbury, Mass.
RHOADS, CHARLES JAMES,	Bryn Mawr, Pa.
WESCOTT, EUGENE MARION,	Shawano, Wis.
WHITALL, FRANKLIN,	Philadelphia, Pa.
WRIGHT, GIFFORD KING	Germantown, Pa.

SCIENTIFIC SECTION.

DAVIS, FRANCIS F.,	Coatesville, Pa.
KNIPE, ARTHUR,	Philadelphia, Pa.
LIPPINCOTT, HORACE GREENOUGH, . . .	Philadelphia, Pa.
OKIE, JOHN MICKLE,	Berwyn, Pa.
OSBORNE, CHARLES,	North Weare, N. H.
PENNYPACKER, WILLIAM GAUSE, JR., . .	Wilmington, Del.
REEVES, FRANK BUTLER,	Germantown, Pa.
RHOADS, EDWARD,	Germantown, Pa.
SENSENIQ, BARTON,	Goodville, Pa.
TAYLOR, JAMES GURNEY,	Burlington, N. J.
WOOD, JAMES HENRY,	Philadelphia, Pa.
WOOLMAN, EDWARD,	Philadelphia, Pa.

ENGINEERING SECTION.

ROBERTS, JOHN,	Downingtown, Pa.
VAUX, WILLIAM S., JR.,	Bryn Mawr, Pa.
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BECHTEL, HARRY OLIVER,	Pottsville, Pa.
BRINTON, HORACE,	West Chester, Pa.
EDWARDS, CLARENCE KINLEY,	Hastings, Neb.
OBERTEUFFER, JAMES PRITCHETT, . . .	Philadelphia, Pa.
READ, WILLIAM JOHNS, JR.,	Cumberland, Md.

SUMMARY.

Graduate Students in Residence,	16
Seniors,	24
Juniors,	12
Sophomores,	27
Freshmen,	32
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	111

ADMISSION.

CANDIDATES for admission to the Freshman Class in the COURSE IN ARTS AND SCIENCE will be examined as to their proficiency in the following requisites :

GREEK.—Grammar, scanning of hexameter verse ; Xenophon's *Anabasis*, four books ; Homer's *Iliad*, three books ; Sight Reading from Xenophon and Homer ; Jones's *Greek Composition*, twenty-five Exercises to be written with the accents.

LATIN.—Cæsar's *Gallic War*, four books ; Vergil's *Æneid*, six books ; Cicero, six orations. Sight reading from Cicero, Cæsar and Nepos. General questions on grammar, prosody, history and mythology suggested by the text. Translation of easy prose from English into Latin. Harkness, Parts I. and II., or Jones's Exercises will indicate the amount necessary.

NOTE.—Equivalents in Greek and Latin will be accepted. Much importance will be attached to ability to read at sight matter not previously studied.

MATHEMATICS.—Arithmetic, including the Metric System ; Algebra, through Radicals and Quadratic Equations ; plane Geometry.

ENGLISH.—Grammar ; a short English Composition, correct in spelling, punctuation and expression. The subject will be drawn in 1890 from Scott's *Lady of the Lake* ; Irving's *Bracebridge Hall* ; Macaulay's *History of England*, Chapter III. ; in 1891 from Longfellow's *Evangeline* ; Carlyle's *Essay on Sir Walter Scott* ; Thackeray's *Four Georges* ; and in 1892 from Longfellow's *Hiawatha* ; Hawthorne's *Twice Told Tales* ; Carlyle's *Essay on Burns*.

NOTE.—Other works of equal merit and extent will be accepted as equivalent.

HISTORY.—Greek, Roman, and United States History.

MODERN LANGUAGES.—In place of the Greek the candidate may offer *both* German and French as follows :

German.—A thorough knowledge of the Grammar; ability to read at sight ordinary prose or poetry, and to translate English sentences into German. The minimum amount to be read may be indicated by Whitney's *German Reader*, Boisen's *German Prose*, Schiller's *Wilhelm Tell*, and a connected piece of prose like Storm's *Immensee* or Eichendorff's *Auf dem Leben eines Taugenichts*.

French.—Whitney's *Grammar*, Part I.; De Rougemont's *La France* (100 pp.); Knapp's *French Readings* (94 pp.); *Télèmaque*, Books I.—III.; *Athalie*; Composition (Whitney's *Grammar*, Part II.)

NOTE.—Equivalents in German and French will be accepted.

Candidates for admission to the Freshman Class in the SCIENTIFIC OR ENGINEERING COURSE will be examined as follows:

LATIN.—As above.

MATHEMATICS.—As above, with the addition of the Properties and the Use of Logarithms.

ENGLISH.—As above.

HISTORY.—As above.

SCIENCE.—The elements of Physics and of Human Physiology.

MODERN LANGUAGES.—Both German and French, as outlined above, may be substituted for the Latin of this course. This is advised in the Engineering Course.

The certificates of principals of first-class schools will be accepted in place of our examination, so far as they cover the ground. Such teachers must fill up blank forms furnished on application. Certificates of private tutors will not be accepted.

Students not candidates for a degree may, at the discretion of the Faculty, be admitted to pursue special courses, for proficiency in which certificates may be granted; but this permission will be given only to students of sufficient age, ability and diligence to insure their success.

Candidates may be admitted to advanced Classes if found on examination thoroughly fitted in all the regular studies of the Course up to the point at which they enter.

Each candidate must forward, together with his application, a certificate of good moral character from his last teacher; and students

from other colleges must present certificates of honorable dismissal in good standing.

APPLICATIONS FOR ADMISSION must be made to the President. Entry Blanks will be furnished on application. Rooms are assigned to old students in the order of seniority, and to new students in the order in which these entry-blanks, properly filled up, are received at the President's office. Candidates will present themselves at Founders' Hall, for examination by the Faculty, *at 9.30 o'clock on the morning previous to Commencement Day*, or at *9.30 o'clock on the morning previous to the beginning of the College Year*.

EXPENSES.

WITH the exceptions noted in the two following paragraphs, the price of Board and Tuition for undergraduates in the College Halls (together with fuel, lights, furniture and service), is five hundred dollars (\$500) a year.

There are a few large rooms in Barclay Hall, each of which may be taken by one student at an increased cost of twenty-five dollars a year, or by two at a decreased cost to each of seventy-five dollars a year.

A few students will be taken in Woodside Cottage. The charge will be \$375 for Board and Tuition.

The charge for Tuition is one hundred and fifty dollars (\$150) a year; for Tuition and mid-day meal, two hundred dollars (\$200) a year.

The College Laundry charges seventy-five cents per dozen for washing.

Students furnish their own books and stationery, and are charged for materials consumed and breakage in the Laboratories.

The charge for Board and Tuition for Graduate Students is three hundred dollars (\$300); for Tuition alone, one hundred dollars (\$100).

Bills for Board and Tuition are payable one half at the beginning and one half at the middle of the College Year.

SCHOLARSHIPS.

A number of scholarships, varying in amount from \$100 to \$500, are at the disposal of the College.

These will be granted to properly qualified students who cannot afford to pay the full charges. In according the scholarships both character and intellectual preparation are taken into account. Students unknown to the Faculty should send, with their application, certificates of moral character. The intellectual preparation is tested by examination. Blank forms on which the application must be written will be furnished by the President of the College. Candidates are advised to apply at an early date.

FELLOWSHIPS.

The College has received a sum of money for the purpose of establishing four Graduate Fellowships, of the annual value of \$300 each,—the whole charge for Board and Tuition. By the conditions of the donors one of these will be given to a graduate of each of the following Colleges, viz.: Haverford, Earlham, Penn, and Wilmington; *Provided*, that the student shall be recommended by the President of the College at which he graduated as likely to profit by the instruction given at Haverford, and that he shall be satisfactory to the Faculty of Haverford College.

Should there not be satisfactory applications for these Fellowships by Fifth month 1st, they may be otherwise disposed of.

COURSES OF INSTRUCTION.

In the Courses in Arts and Science, Latin and Mathematics are required through two years. Should the student present Greek for admission, he is required to continue it for two years, and take German and French for one year. Should he present German and French for admission, he is required to continue them for two years. All these subjects may be continued as electives. Some election is allowed in the Junior year. The Senior year is largely elective.

In the Scientific Course, Latin is required one year (unless the student presents German and French for admission), and Mathematics three years. Particular attention is given to the Modern Languages and the Sciences throughout the course. Electives may be taken as in the Course in Arts and Science.

In the Engineering Course, the Freshman year is nearly the same as in the Scientific Course. After this there is divergence, the Engineering students taking more Mathematics, Mechanics, Shop Work, and Drawing as required studies.

COURSE IN ARTS AND SCIENCE.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.
2. *Mathematics*. Sharpless's Geometry; Hall & Knight's Algebra. Four hours a week the first half year, five the second.
3. *Greek*. (See note below.) Lysias, *Select Orationes*; Herodotus, *Selections*; Homer, *Selections*; Translations at sight; Sidgwick's Greek Composition. Four hours a week.
4. *Latin*. Livy (Chase); The Odes and Epodes of Horace (Chase); Review of Latin Grammar; Translation at sight (Cicero, *De Senectute* and *De Amicitia*); Prose Composition. Four hours a week.
5. *Rhetoric and English Composition*. Principles of Rhetoric (A. S. Hill); Readings in English Prose; Composition (exercises in the class-room); Themes. Two hours a week the first half, one the second.
6. *Hygiene and Descriptive Botany*. One hour a week.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission, will take the elective studies in German and French.

SOPHOMORE CLASS.

1. *Scripture*. The Greek Testament, Luke's Gospel. One hour a week.
2. *Mathematics*. Lock's Elementary Trigonometry; Surveying, with Field Practice; Smith's Analytical Geometry. Three hours a week.
3. *Greek*. (See note below.) Plato, *Apology* and *Crito*, or *Phaedo*; Æschylus, *Prometheus*; Aristophanes, *Frogs*; Translation at sight. Dictation Exercises in writing Greek. Three hours a week.
4. *Latin*. The *Germania* and *Agricola* of Tacitus; Selections from the Latin Poets; Cicero's Letters; Translations at sight (Cornelius Nepos). Prose Composition. Three hours a week.
5. *English Literature*. History of English Literature; Readings in English Poetry; Themes. Two hours a week the first half-year.
6. *History*. Outlines of Ancient History; Mediæval History. (Text-Book and Lectures). Two hours a week the second half-year.
7. *Physics*. Stewart's *Lessons*, with Experimental Lectures; Laboratory Work. Four hours a week the first half-year.
8. *Chemistry*. General Inorganic Chemistry; Laboratory Work. Four hours a week the second half-year.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission to the Freshman Class will take elective courses in German and French.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. One hour a week.
2. *German*. (For those who have not studied the language.) Joynes-Meissner's *Grammar*; Niebuhr's *Heroengeschichten*; Boisen's *Prose Extracts*; Translations at sight; Exercises in translating English into German. Four hours a week the second half year.
3. *French*. (For those who have not studied the language.) Whitney's *Grammar*, Part I.; De Rougemont's *La France*; Knapp's *French Readings*; Composition (Whitney's *Grammar*, Part II.) Four hours a week the first half year.
4. *Political Science*. Political Economy; Principles of Constitutional Law (Text-Book and Lectures). Two hours a week.
5. *Philosophy*. Logic and Psychology. Two hours a week.
7. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on page 28 enough to make 15 hours per week with their required studies.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. Once a week.
2. *Ethics*. Two hours a week.
3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on page 28 enough to make 15 hours per week with their required studies.

SCIENTIFIC COURSE.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.

2. *Mathematics*. Sharpless's Geometry; Hail and Knight's Algebra; Lock's Elementary Trigonometry; Lodge's Mechanics. Six hours a week the first half year, seven the second.

3. *Latin*. Livy (Chase); The Odes and Epodes of Horace (Chase); Review of Latin Grammar; Translations at sight (Cicero, *De Senectute* and *De Amicitia*); Prose Composition. Four hours a week.

NOTE.—Students presenting Modern Languages in place of Latin for admission, will substitute for the Latin of the Freshman year French and German from the elective list.

4. *Rhetoric and English Composition*. Principles of Rhetoric (A. S. Hill); Readings in English Prose; Composition (Exercises in the class-room); Themes. Two hours a week the first half-year, one the second.

5. *Hygiene and Descriptive Botany*. One hour a week.

6. *Drawing*. Five hours a week.

SOPHOMORE CLASS.

1. *Scripture*. Elements of the History of Israel; Luke's Gospel. One hour a week.

2. *Mathematics*. Spherical Trigonometry; Geometry of Conics; Surveying, with Field Practice; Smith's Analytical Geometry. Three hours a week.

3. *German*. Joynes-Meissner's *Grammar*; Niebuhr's *Heroengeschichten*; Boisen's *Prose Extracts*; Translations at sight; Exercises in translating English into German. Three hours a week.

4. *French*. Whitney's *Grammar*, Part I.; De Rougemont's *La France*; Knapp's *French Readings*; Composition (Whitney's *Grammar*, Part II.) Three hours a week.

NOTE.—Students presenting Modern Languages in place of Latin for admission, will take advanced work in German and French instead of that outlined above.

5. *English Literature*. History of English Literature; Readings in English Poetry; Themes. Two hours a week the first half-year.

6. *History*. Outlines of Ancient History; Mediæval History (Text-Book and Lectures. Two hours a week the second half-year.

7. *Physics*. Stewart's *Lessons*, with Experimental Lectures: Laboratory Work. Four hours a week the first half-year.

8. *Chemistry*. General Inorganic Chemistry; Laboratory Work. Four hours a week the second half-year.

9. *General Biology*. Lectures and Laboratory Work. Twice a week.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Teachings of Christ. One hour a week.

2. *Mathematics*. Differential and Integral Calculus. Three hours a week.

3. *German*. Lessing's *Minna Von Barnhelm*; Eichendorff's *Aus dem Leben eines Taugenichts*; Goethe's *Iphigenie*; Exercises in German Composition (based on Whitney's German Grammar). Three hours a week.

4. *French*. Knapp's *French Readings*; *Télémaque*; *Athalie*; Composition (Whitney's *Grammar*, Part II.); Lectures on the Language and Literature; Private Reading; (examinations will be held upon some of the books suggested.) Three hours a week.

5. *Political Science*. Political Economy; Principles of Constitutional Law; Text-Book and Lectures. Two hours a week.

6. *Philosophy*. Logic and Psychology. Two hours a week.

7. *Chemistry*. Chemistry of the Compounds of Carbon. Two hours a week the first half-year.

8. *Physics*. Heat or Electricity. Two hours a week the second half-year.

9. *Themes*.

NOTE.—Students who have had two years in French and German may take studies from the elective list in their place.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Teachings of Christ. One hour a week.

2. *Ethics*. Two hours a week.

3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on page 28 enough to make 15 hours per week with their required studies.

MECHANICAL ENGINEERING COURSE-

In the first two years of the Engineering Course, the same work is required as in the Scientific Course, except that Shop Work and Mechanical Drawing take the place of History and Biology.

Students are advised to substitute French and German for the Latin of the Freshman year.

During the last two years students in Mechanical Engineering give their time to Mathematics, Shop Work, Drawing, study of the Materials of Engineering, the Theory of Constructions, and other special Engineering work. *

Scripture and Themes are required through the four years, and a course in Ethics in the Senior year.

CHEMICAL AND ELECTRICAL COURSES.

Students may substitute for the last two years of the Scientific Course, a special course in Chemistry, embracing both theory and Laboratory Work. Qualitative and Quantitative Analysis may be thoroughly studied.

Students may substitute for the last two years of the Scientific Course, a special course in Electricity. This will include Laboratory and Classroom work; the former will be devoted mainly to the accurate measurement of electrical quantities; while the latter will be divided into two parts, the first year being spent upon the theory, and the second upon the applications of electricity.

ELECTIVE COURSES.

Seniors and Juniors will elect from the following list, with the approbation of the Faculty, sufficient to make up the required number of hours.

HEBREW.

Grammar. Old Testament. Reading. [Prof. Harris. 3.]*

GREEK.

I. Selections from the Greek orators; Æschylus; Pindar; Studies in Greek Art and Antiquities. [Prof. Gifford. 3.]

II. Sophocles; Thucydides; Extemporalia; Dictation exercises in writing Greek. [Prof. Gifford. 3.]

LATIN.

I. Horace, *Ars Poetica*; Juvenal, *Thirteen Satires* (Pearson and Strong); Suetonius, *Divus Julius* and *Divus Augustus* (Roth); Tacitus, Selections from *Annals* and *History* (Halm, Furneaux); Plautus, *Captivi* (Fleckeisen, Harrington); *Trinummus* (Freeman and Sloman); Cicero, Selections from Philosophical Works. [Prof. Sanford. 3.]

II. Readings from the following authors will occupy two hours each week during the College year. Pliny, *Letters* (Keil, Holbrooke); Vergil, *Bucolics*; Terence *Adelphi* (Fleckeisen); Lucretius (Monro, Crowell); Catullus, Tibullus, Propertius, Ovid, Lucan (Crowell, and Teubner Texts).

One hour each week during the year will be occupied as follows: During the first half, Lectures and Examinations on Topography of Italy, and particularly, on the Topography, Buildings, Statuary, etc., of Ancient Rome; during the latter half of the year an outline of the whole of Roman Literature.

[Prof. Sanford. 3.]

ENGLISH.

I. ANGLO-SAXON.—Sweet, *Anglo-Saxon Reader*. Cynewulf's *Elene*. Lectures. [Prof. Gummere. 2.]

II. ENGLISH LITERATURE IN THE FOURTEENTH CENTURY.—Skeat, *Piers Plowman*. Chaucer's *Canterbury Tales*. Lectures. [Prof. Gummere. 2.]

This course will be omitted in 1890-91.

*These figures represent the number of hours per week. In Laboratory Work, etc., two and a half hours count as one.

III. SHAKSPERE.—*Lear, Hamlet, Tempest, As You Like It.* Lectures on Elizabethan Poetry. [Prof. Gummere. 2.]

IV. ADVANCED ENGLISH COMPOSITION.—Exercises in Composition. Discussion of special work. Readings in English Prose. Two hours a week the first term, one hour the second. [Prof. Gummere. 2.]

Only those who have attained good rank in themes for the Freshman and Sophomore years will be admitted to this class. Members of it will be exempted from regular theme-work, but must count the elective as a one-hour course.

GERMAN.

I. MIDDLE-HIGH-GERMAN.—Paul, *Mittelhochdeutsche Grammatik*. Selections from the poems of Walther von der Vogelweide. *Das Nibelungenlied*. [Prof. Gummere. 2.]

II. GOETHE AND SCHILLER.—*Faust; Wallenstein*; Selected Poems. History of German Literature. Exercises in German Composition. [Prof. Gummere. 3.]

III. Lessing's *Minna von Barnhelm*. Selections from German Prose. Exercises in German Composition. [3.]

FRENCH.

I. Historical Grammar. Selections from Mediæval and Renaissance Literature. Lectures. Themes in French. [Prof. Ladd. 3.]

II. Daudet's *Contes*; Corneille's *Le Cid*; Moliere's *Le Misanthrope*, Hugo's *Hernani*; Exercises in Composition and Idioms; Lectures on the Language and Literature; Private Reading. (Works will be suggested upon some of which examinations will be held.) [Prof. Ladd. 3.]

III. Knapp's *French Readings; Têlêmaque; Athalie*; Composition (Whitney's *Grammar*, Part II.) Lectures on the Language and Literature. Private Reading; (examinations will be held upon some of the books suggested.) [Prof. Ladd. 3.]

IV. Classical Juniors may continue the work outlined in Courses 3, page 24, the second half year. [Prof. Ladd. 2.]

MATHEMATICS.

I. Statics or Dynamics (see under Physics). [Prof. Crew. 3.]

II. Higher Analytical Geometry and Elementary Differential Equations. [Prof. Morley. 3.]

III. Elementary Calculus. [Prof. Morley. 3.]

HISTORY.

I. Mediæval and Modern European History. [Prof. Thomas. 2.]

II. Political and Constitutional History of England from the Anglo-Saxon Conquest to the Restoration. [Prof. Thomas. 3.]

III. Political and Constitutional History of England from the Restoration to the present time. [Prof. Thomas. 3.]

Courses II. and III. are intended to be given in alternate years.

IV. American Colonial History to 1783; Europe and America during the Eighteenth Century. [Prof. Thomas. 3.]

V. Constitutional and Political History of the United States, 1783 to 1865. [Prof. Thomas. 3.]

Courses IV. and V. are intended to be given in alternate years.

VI. Ecclesiastical History. The Doctrines and Discipline of the Church as far as the first council of Nicæa (A. D. 325). [Prof. Harris. 3.]

ASTRONOMY.

I. Practical Astronomy with Observatory Practice. [Prof. Leavenworth. 2.]

II. Descriptive Astronomy. (Half Year). [President Sharpless. 2.]

CHEMISTRY.

Qualitative or Quantitative Analysis. Advanced Experimental Work. [Prof. L. B. Hall. 2 or 4.]

BIOLOGY.

I. General Biology; Lectures and Laboratory Work. [Prof. W. S. Hall. 2.]

II. Invertebrate Zoölogy and Plant Histology. [Prof. W. S. Hall. 2.]

III. Vertebrate Anatomy and Histology. [Prof. W. S. Hall. 2.]

IV. Embryology. (Half Year). [Prof. W. S. Hall. 2.]

GEOLOGY.

Elementary Geology. (Half Year). [Prof. W. S. Hall. 2.]

ENGINEERING.

Materials of Construction; Theory of the Steam Engine. [Prof. Edwards. 2.]

PHYSICS.

I. Mathematical Physics. (This also offered as Mathematics I.) [Prof. Crew. 3.]

II. Physical Optics and Electricity; Lectures and Laboratory Work. [Prof. Crew. 2.]

III. Theory of Heat and Electricity; Laboratory Work. [Prof. Crew. 2.]

Courses II. and III. will be given in alternate years.

LECTURES.

The Lectures and Courses of Lectures to the whole college for the year 1888-9 were as follows:

<i>Physical Training and College</i>	}	PRESIDENT SHARPLESS.
<i>Sports,</i>		
<i>Germanic Myths,</i>		DR. F. B. GUMMERE.
<i>Isaiah and His Times,</i>		R. W. ROGERS.
<i>The Contemplation of the Poetic Genius,</i>		ALDEN SAMPSON.
<i>Adventures in Asia,</i>		DR. J. L. PHILIPS.
<i>Respect for Authority,</i>		DR. GEO. DANA BOARDMAN.
<i>Gladstone,</i>		DR. W. H. S. AUBREY.
<i>The Labor Problem,</i>		R. G. HORR.
<i>Rome,</i>		DR. E. P. TERHUNE.
<i>Ninety Minutes in Great Britain, . .</i>		CHARLES H. ADAMS.

GRADING OF STUDENTS.

Students are divided, according to their grades, into five sections, A, B, C, D, E. Each student is notified of the section to which he has been assigned, but the grades are not published. Section E is composed of these who cannot be advanced to the next higher class, nor receive their Bachelor's degree. Daily recitations, hour examinations, and final examinations are all used as elements in determining the standing of a student.

ADVANCED DEGREES.

BACHELORS OF ARTS, BACHELORS OF SCIENCE, and BACHELORS OF ENGINEERING of three years' standing may take the degrees of MASTER OF ARTS, MASTER OF SCIENCE, or MECHANICAL ENGINEER on submitting to the Executive Committee satisfactory evidence of continued good moral character, and passing an examination on some literary or scientific course of study, which shall receive the approbation of the Faculty and Managers.

The following are stated as adequate courses of study to be presented by candidates for the second degree. Particulars can be had on application to the President.

I. Hebrew. Mitchell's Gesenius' Hebrew Grammar. Critical and philological reading and analysis of I. and II. Samuel; I. and II. Kings. Sight reading of Genesis, unpointed (edition of Muehlau et Kautzsch, Lipsiæ, 1885.)

II. Assyrian. Lyon's Assyrian Manual. Friedrich Delitzsch's Assyrische Lesestücke. Syllabare (Sb. Sc.) S. 53-75. Neuassyrische Texte, (S. 110, 4-121.)

III. The whole of the New Testament in Greek, with the introductions to N. T. of Scrivener, and of Hort.

IV. The whole of Thucydides, together with Grote and Curtius on the Peloponnesian War; Greek composition.

V. Twelve Tragedies of Æschylus, Sophocles, or Euripides; Greek composition.

Note.—A course similar to IV. and V. may be arranged in other Greek authors.

VI. Cicero's Tusculan Disputations (five books), De Natura Deorum and De Officiis, together with the History of Ancient Philosophy; Latin composition.

VII. The whole of Tacitus, together with Merivale; Pliny's Letters; Latin composition.

VIII. German Literature, with translation at sight from any of the leading authors, and a short essay in German.

IX. French Literature, with translation at sight from any of the leading authors, and a short essay in French.

X. Greek Literature, with translation at sight from any of the leading authors, and a short original essay in Greek.

XI. Latin Literature, with translation at sight from any of the leading authors, and an original essay in Latin.

XII. Pure Mathematics. Two of the following:

a. Theory of the cubic and special higher plane curves (Salmon).

- b.* Theory of Equations and Substitutions (Burnside and Panton, Netto).
- c.* Differential Equations (Forsyth).
- d.* Elliptic Functions (Halphen).
- e.* Theory of Functions (Briot et Bouquet).
- f.* Theory of Invariants and Covariants (Salmon).

The works indicated will be those studied; others will be made use of.

The course will require a knowledge of the Differential and Integral Calculus such as is implanted by the works of Williamson or Byerly.

XIII. Mixed Mathematics. Two of the following:

- a.* Partial Differential Equations (Riemann,).
- b.* Spherical Harmonics (Heine).
- c.* Statics (Minchin).
- d.* Dynamics (Williamson, Routh).

The course will require a knowledge of Differential Calculus, and of Statics and Dynamics, such as is implanted by Greaves' Statics and Garnett's Dynamics.

XIV. Theoretical Astronomy (Computation of an Orbit—Oppolzer).

XV. Practical Astronomy (Doolittle and Chauvenet); Observatory Work.

XVI. Rankine's Applied Mechanics, or Rankine's Civil Engineering.

XVII. European History; Political, Constitutional, Economic.

XVIII. American History; Political, Constitutional, Economic.

XIX. Ecclesiastical History. A general knowledge of the leading facts in Early Church History and an acquaintance with Greek and Latin will be required; a special subject may be selected from the following:

a. The writings of Barnabas and Justin and the Teaching of the Twelve Apostles.

b. The Clementine and Ignatian Epistles.

c. The Development of Christian Institutions (Stanley, Hatch, etc.)

d. The Ecclesiastical History of Eusebius.

XX. Germanic Philology and Literature. (One of the following to be selected):

a. *Anglo-Saxon*.—Grein's *Bibliothek der angelsächsischen Poesie*; Sweet's Edition (Early English Text Society) of the Anglo-Saxon Version of the *Cura Pastoralis*; Cook Sievers' Anglo-Saxon Grammar. A knowledge of Gothic Grammar is required in this as in the next course.

b. *Middle High German*.—*Das Nibelungenlied*; Walther von der Vogelweide; *Gudrun*; History of Early German Literature; Old High German Grammar.

c. *Old Norse*. A course similar to *a* and *b* can be arranged in Old Norse literature and philology.

XXI. English Literature. An intimate acquaintance with the authors of some characteristic epoch will be required, and a good English style, manifested in an original essay.

XXII. Physics. Any two of the following, with Laboratory work. Mechanics (Sturm); Fluid Motion (Lamb); Optics (Verdét); Thermodynamics (Clausius); Electricity and Magnetism (part of Mascart and Joubert); Acoustics (Dunkin.)

XXIII. Comparative Morphology.

XXIV. Pathology and Bacteriology.

XXV. Chemistry.

XXVI. Political Economy.

} Courses in these subjects can be arranged
by consultation with the Professor in charge
of the department.

Candidates who are examined may also, if they desire, hand in Dissertations on topics in the field of study which they have specially investigated.

Resident Graduates, who have completed an adequate course of study, may be admitted to an examination for a second degree before the expiration of three years, if the Faculty deem it proper.

Graduates of other Colleges and Scientific schools of good standing, who present satisfactory evidence of character and qualifications, will be admitted as candidates for the degree of Master of Arts. One year's residence at Haverford College will be required of all such students.

Bachelors of Arts and Science may be examined for the degrees of DOCTOR OF PHILOSOPHY and DOCTOR OF SCIENCE; but such degrees will be conferred only after satisfactory proof of the faithful and successful prosecution of courses of study fully equal in extent and quality to those required for similar honors in the best Universities.

Notice of application for examination must be given to the President two months before Commencement. The examinations for non-residents will be held the last week in the Fifth month, and no later. The fee for the Diploma of the Second Degree is Twenty Dollars, of subsequent degrees, Thirty Dollars, to be paid in all cases before the 10th of the Sixth month.

ALUMNI PRIZE FOR COMPOSITION AND ORATORY.

THE Association of the Alumni, in the year 1875, established an ANNUAL PRIZE of a Gold Medal, or of a Bronze Medal and Books of equal value, for excellence in Composition and Oratory.

The prize was awarded last year to EDWARD MOTT ANGELL, of the class of 1890, for his Oration on "Environment."

The following are the Rules governing the competition :

I. The Alumni Medal is offered yearly to the competition of the members of the Senior and Junior Classes, as a prize for the best delivered oration prepared therefor.

II. Three or five Judges shall be appointed from year to year by the Alumni Committee, who shall, on the evening of the last Sixth-day in the Fifth month, hear publicly, in Alumni Hall, all competitors who may be qualified to appear.

III. No oration shall occupy in delivery more than fifteen minutes.

IV. In making their award, while due weight is given to the literary merits of the oration, the Judges are to consider the prizes as offered to encourage more especially the attainment of excellence in elocution.

V. The Judges shall have the right to withhold the prize if the elocution and the literary merits of the oration fall below a suitable standard of excellence.

LIBRARY.

LIBRARIAN, Professor Allen C. Thomas ; Frank W. Peirson, *Assistant*.

THE number of bound volumes in the library of Haverford College is 17,451. Numerous American and European periodicals, scientific and literary, are taken by the Library.

The Library is open as a reading-room from 9 A. M. to 6 P. M., during which time the volumes in the alcoves may be freely consulted. The Librarian devotes stated hours each week to the purposes of assisting and directing students in their reading, and in the skilful use of books of reference and consulting of authorities. He also arranges courses of reading.

A CARD CATALOGUE shows at once what books, essays or review articles the Library possesses on any subject, and where they may be found.

MUSEUM.

CURATOR, Dr. W. S. Hall.

THE MINERALOGICAL CABINET contains over 3,000 specimens, and the GEOLOGICAL about 5,000. There are also collections of FOSSILS and SHELLS ; a valuable collection of BIRDS and BIRDS' EGGS ; a number of Ward's CASTS of fossil species ; an HERBARIUM illustrating the Flora of the vicinity ; and a large number of Zoölogical specimens other than Birds and Shells.

CHEMICAL LABORATORY.

DIRECTOR, Dr. Lyman B. Hall.

The Laboratory work comprises qualitative and quantitative analysis, the preparation of pure compounds, and experimental work illustrative of chemical theories.

Opportunity is afforded for elementary or advanced special work, with ample facilities for its prosecution.

BIOLOGICAL LABORATORY.

DIRECTOR, Dr. W. S. Hall.

This laboratory is furnished with a number of Microscopes for students' use, a set of Auzoux's Clastic Models, Kny and Dodel-Port's Botanical Diagrams, Leuckart and Nitschse's Zoölogical Charts, and other necessary apparatus for Biological investigation.

PHYSICAL LABORATORY.

DIRECTOR, DR. Henry Crew.

The Physical Laboratory occupies five medium-sized rooms, and is well equipped for work in the various departments of physics, especially in electrical measurements.

The students are assigned work in the accurate measurement of various physical quantities in mechanics, heat, light and electricity.

THE MACHINE SHOP.

DIRECTOR Professor Levi T. Edwards.

The MACHINE SHOP is equipped with all the tools necessary for instruction in carpenters' and mechanics' work, including hand and machine lathes, planer, shaper, drill press, forge, vises, etc., with a 10 horse-power steam-engine and boiler.

The work in the shop is conducted by means of progressive exercises, combining the principles met with in machine construction.

The students, under the care of the Director, are taken to visit machine shops and engineering constructions in Philadelphia and its vicinity.

ASTRONOMICAL OBSERVATORY.

DIRECTOR, Professor F. P. Leavenworth.

The HAVERFORD OBSERVATORY affords the students the means of becoming familiar with the use of astronomical instruments, and of acquiring, from actual observation, a practical acquaintance with Astronomy.

It contains two Equatorial Telescopes, one by Clark, having an object-glass 10 inches in diameter, and one with an object-glass of $8\frac{1}{4}$ inches, with filar micrometer, and eye-pieces; a polarizing eye-piece; a Newtonian Reflector, with a silver-on-glass speculum of $8\frac{1}{4}$ inches diameter; a Prism Spectroscope; a Meridian Transit Circle, having a Telescope of $3\frac{3}{4}$ inches aperture, with a circle at each end of the axis 26 inches in diameter; a Zenith Instrument of $1\frac{3}{4}$ inches aperture, with a micrometer; two Sidereal Clocks, one with mercurial compensation, the other used to connect with a Bond's Magnetic Chronograph.

The latitude of the observatory is $40^{\circ} 0' 40''$ N.; its longitude, 6 minutes 59.4 seconds East from Washington.

A Special Course in Astronomy is offered to Amateurs and Teachers. The requisites for the Course and the fees charged will depend on the work which the applicant desires to perform.

THE GYMNASIUM.

DIRECTOR, Dr. W. S. HALL.

The GYMNASIUM is fitted with the apparatus of Dr. D. A. Sargent, of Harvard University. The Director gives systematic instruction, based upon careful personal examination, to each student desiring such aid. Examinations and regular work in the Gymnasium are required of all members of the Sophomore and Freshman Classes. Required work begins 12th Mo. 1st, and ends 4th Mo. 1st, and occupies three hours each week. It is arranged in three courses, each requiring one season. New students who have had *systematic* gymnasium drill may omit the first course and take the second and third. The work is optional for Seniors and Juniors.

LITERARY SOCIETIES.

The LOGANIAN SOCIETY was established by the Officers and Students in 1834.

The EVERETT-ATHENÆUM is a literary society of the students.

DEGREES GRANTED IN 1889.

At the Commencement in 1889 Degrees were granted in course to the following graduates :

MASTER OF ARTS.

LEVI TALBOT EDWARDS, of the Class of 1881.
 HENRY HERBERT GODDARD, of the Class of 1887.
 HENRY VOLKMAR GUMMERE, of the Class of 1888.
 ALLISON WING SLOCUM, of the Class of 1888.
 MARTIN BELL STUBBS, of the Class of 1888.

BACHELOR OF ARTS.

ROBERT COLEMAN BANES.	LAWRENCE JOHNSON MORRIS.
THOMAS FRANKLIN BRANSON.	WILLIAM FRANKLIN OVERMAN.
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J. RENDEL HARRIS.

Work of Haverford College Observatory.

F. P. LEAVENWORTH.

On the Geometry of a Nodal Circular Cubic.

FRANK MORLEY.

On the Period of Rotation of the Sun.

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On the Symbolic Use of the Colors Black and White in Germanic Tradition.

FRANCIS B. GUMMERE.

CONTENTS OF No. 2.

The Rest of the Words of Baruch.

J. RENDEL HARRIS.

Some Esarhaddon Inscriptions.

ROBERT W. ROGERS.

Price, One Dollar per Number.

Other numbers will appear as material accumulates.

It is intended to issue Nos. 3 and 4 during the Collegiate Year 1889-90.

For copies address

The Secretary of Haverford College,

Haverford College P. O., Pa.

CATALOGUE
OF
HAVERFORD COLLEGE.



1890-91.



CATALOGUE

OF

HAVERFORD COLLEGE

(HAVERFORD COLLEGE P. O., PA.)

1890-91.



Philadelphia:
PRESS OF FERRIS BROTHERS
SIXTH AND ARCH STREETS

CALENDAR.

College Year 1890-91 began	9th Mo. 24
Alumni Prize Orations	12th Mo. 22
Winter Recess begins	12th Mo. 23
Winter Term begins, 1891 *	1st Mo. 6
Mid-year Examinations begin	1st Mo. 23
Second Half-year begins	2d Mo. 2
Junior Exercises	4th Mo. 16
Spring Recess begins	4th Mo. 17
Spring Term begins *	4th Mo. 28
Alumni Meeting	6th Mo. 22
Examinations for Admission, 9.30 A.M.	6th Mo. 22
Commencement Day, 1891	6th Mo. 23

VACATION OF THIRTEEN WEEKS.

Examinations for Admission, 9.30 A.M.	9th Mo. 22
College Year 1891-92 begins *	9th Mo. 23
Alumni Prize Orations	12th Mo. 21
Winter Recess begins	12th Mo. 23
Winter Term begins 1892 *	1st Mo. 5
Second Half-year begins 1892	2d Mo. 1
Junior Exercises	4th Mo. 14
Spring Recess begins	4th Mo. 15
Spring Term begins	4th Mo. 26
Alumni Meeting	6th Mo. 20
Examinations for Admission, 9.30 A.M.	6th Mo. 20
Commencement Day, 1892	6th Mo. 21

* The first recitations are due promptly at *half-past nine o'clock*, at the beginning of each Term. No absences from them are excused, unless clearly unavoidable.

CONTENTS.

Calendar,	2
History and Description,	4
Corporation,	8
Faculty,	9
Graduate Students,	11
Undergraduate Students,	13
Seniors,	13
Juniors,	14
Sophomores,	15
Freshmen,	16
Summary of Students,	17
Admission,	18
Expenses,	20
Scholarships,	21
Fellowships,	21
Courses of Instruction for Undergraduates,	22
Course in Arts and Science,	23
Scientific Course,	25
Mechanical Engineering Course,	27
Elective Courses,	27
Lectures,	31
Grading of Students,	31
Advanced Degrees and Graduate Instruction,	32
Alumni Prize,	35
Prizes for Systematic Reading,	35
Library,	36
Chemical Laboratory,	37
Physical Laboratory,	37
Biological Laboratory,	38
Museum,	38
Mechanical Laboratory,	39
Astronomical Observatory,	39
Gymnasium,	40
Literary Societies,	40
Degrees granted in 1890,	41
List of Graduates and Honorary Degrees,	44

HISTORY AND DESCRIPTION.

IN the spring of 1830, a meeting of a few Friends in Philadelphia, shortly followed by a similar meeting in New York, originated Haverford School. The joint committee expressed the object of the effort as follows: "The members of the Society of Friends, having hitherto labored under great disadvantages in obtaining for their children a guarded education in the higher branches of learning, combining the requisite literary instruction with a religious care over the morals and manners of the scholars, . . . and carefully preserving them from the influence of corrupt principles and evil communications, it is therefore proposed that an institution be established in which the children of Friends shall receive a liberal education in ancient and modern literature, and the mathematical and other sciences."

The \$40,000 supposed to be necessary was raised without effort, and the committee went out to seek a location. They say: "We wished to procure a farm in a neighborhood of unquestioned salubrity—within a short distance of a Friends' meeting—of easy access from this city at all seasons of the year, . . . and that was recommended by the beauty of the scenery and retired situation." Then they go on to say, that of the many places presented to them the only one which combined all the advantages was one of 198½ acres (since increased to 215), "near the eight-mile stone on the Lancaster Turnpike." They explain the present and prospective merits of the farm, the beauty of the natural woods, the unfailing springs of purest water, the nearness to the new Pennsylvania Railroad, in words which the succeeding half-century has amply justified.

On the 28th of Tenth Month, 1833, the school opened with 21 students. Provisions had been made for three teachers and a superintendent.

"A Teacher of Ancient Languages and Ancient Literature.

"A Teacher of English Literature and of Mental and Moral Philosophy.

"A Teacher of Mathematics and Natural Science."

The Superintendent was to have charge of the order and domestic economy of the family.

The regulations of the new school were rigid. The bounds and time of the boys were very strictly marked out. All the details of the daily programme were arranged with great care; and if the elaborate provision of a number of wise men for the normal growth of students could convert boys into perfect men, the students of Haverford of fifty years ago had every advantage.

The High School thus established grew rapidly into prosperity and debt. The charges were low, the teachers were liberally paid, and the years which followed were marked by a constant endeavor to produce a maximum of good fruits from very limited funds. The deficiencies were made up in a liberal spirit, and a constant growth maintained by frequent subscriptions. All the time the school was justifying the effort by the quality of its results, and making for itself an increasing number of friends.

One of the first acts of the committee, after the absolute necessities of the school were provided for, was to construct a gymnasium, and make arrangements for systematical physical work. They were determined that the advantage gained by the salubrity of the surroundings should not be lost for want of exercise. Under their care the lawn was graded at great expense, and foreign and native trees set out, with the design to make it a great arboretum. Cricket was introduced, a game not known elsewhere in America, and has always flourished since. A greenhouse and flower garden were established and maintained for twenty years by the work of the boys. The ideas that have done harm elsewhere, that schools were places for mental development only, had no foothold here, but morals, muscle, and senses received their due share of culture.

In 1845 a temporary suspension was decreed, to allow the funds to accumulate and give time for the collection of an endowment, which suspension lasted for three years. In 1852 the observatory was built, and supplied with an 8-inch equatorial and 4-inch transit. In 1856 the school was changed to a college, and authorized by the Legislature to grant degrees, but previous to this time the course had been as extended as in many colleges. It was still hampered with a large preparatory department, which was not abolished till 1861. In 1863 the Alumni Hall and Library were built. In 1876-7 Barclay Hall, containing private dormitories and study-rooms, was erected, at a cost of

\$82,000, which was collected by subscription. The Chemical Laboratories were perfected in 1878. The new Observatory was built in 1883, the Mechanical Laboratory established in 1884, and a new building erected in 1890, the Biological Laboratory was established in 1886, and the Physical Laboratory in 1888. Chase Hall, for lecture and recitation rooms, was built in 1888.

During this time Haverford had developed into a fully organized college. Many rules, adapted to boys of a boarding school age, had been modified or abandoned, though enough of restraint was retained to provide against demoralization. The standard of admission was raised. Students of any denomination were admitted, though Friends still retained the general control. The number of teachers was increased five-fold. By various donations and bequests the endowment fund was enlarged. The annual charge was increased from \$200 to \$500,* which still fails to represent what the college has to pay for professors' salaries and board and care of students. Retaining the old idea of a "guarded education" and "a religious care over morals and manners," the college has sought to effect these results, and has measurably succeeded, rather by appeals to Christian principle and manliness than by arbitrary power.

In Barclay Hall, the hall of residence, two students occupy a study-room, and each has his private, adjoining bed-room. A few single rooms are also provided. Recitation-rooms, laboratories, and dining-room are in Founders' Hall. The library and observatory are in separate buildings near by. Some of the professors live in the halls with the students, and others have cottages on the grounds.

The college has a remarkably pleasant and healthful location in the township of Haverford, Delaware County,† Pa., nine miles west of Philadelphia, on the Pennsylvania Railroad. The buildings are surrounded by grounds of about sixty acres, tastefully laid out, and adorned with well-kept lawns, and a great variety of trees and shrubbery. These grounds comprise excellent fields for cricket, base-ball, foot-ball, tennis and other field games, a running and bicycle track, and a pond for skating.

The courses of study are designed to give a liberal education. Their scope will be seen on the following pages. Religious instruction

* The price may vary, depending on the situation of the room, from \$375 to \$525. Most of the rooms involve a payment of \$500.

† Haverford College *Post-Office* is in Montgomery County.

is carefully provided. In addition to the daily reading of the Holy Scriptures, recitations in the English or Greek New Testament or in Scripture History are required of the student once a week. By exposition and collateral information the instructors endeavor to enforce the true meaning of the lessons. Haverford College desires to inculcate the simple truths of the Christian religion.

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Professor of French.

FRANCIS B. GUMMERE, Ph.D.,
Professor of English and German.

* Arranged primarily as Professors, Instructors, etc., secondarily in the order of appointment.

† On leave of absence in Europe for the collegiate year of 1890-91.

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FRANK MORLEY, A.M.,

Professor of Mathematics.

FRANCIS P. LEAVENWORTH, A.M.,

Director of the Observatory.

HENRY CREW, PH.D.,

Instructor in Physics.

WINFIELD SCOTT HALL, M.S., M.D.,

*Instructor in Biology (David Scull Foundation). Instructor in
Physical Training.*

LINDLEY MURRAY STEVENS, A.B.,

Instructor in Mathematics.

JOHN H. BECHTEL,*Instructor in Elocution.*

JONATHAN MOWRY STEERE, A.B.,

Secretary of the College.

CHARLES THURSTON COTTRELL, A.B.,

Assistant in the Library.

GRADUATE STUDENTS.

BYERS, LAWRENCE MARSHALL, A.B. (Penn, 1890),
 Oskaloosa, Ia.
 Penn Fellow.
Major Subject—Astronomy.

CARROLL, WILLIAM HUNT, A.B. (Wilmington, 1890),
 Wilmington, O.
 Wilmington Fellow.
Major Subject—Astronomy.

CLEMENT, ALLEN BALLINGER,
 Camden, N. J.
Major Subject—Electricity.

COTTRELL, CHARLES THURSTON, A.B. (Haverford, 1890),
 Jamestown, R. I.
Major Subject—English.

GILBERT, HENRY LEE, A.B. (Haverford, 1890),
 Philadelphia, Pa.
Major Subject—Semitic Languages.

HALEY, EDWIN JAMES, S.B. (Haverford, 1890),
 West Chester, Pa.
Major Subject—Chemistry.

HIBBERD, DILWORTH P., S.B. (Haverford, 1890),
 Malvern, Pa.
 Haverford Fellow.
Major Subject—Mathematics.

HILL, MYRON FRANCIS, A.B. (Harvard, 1890),
 Haverford College, Pa.
Major Subject—International Law.

ROBINSON, LUCIAN MOORE, A.B. (Harvard, 1882),
Philadelphia, Pa.

Major Subject—N. T. Textual Criticism.

STEERE, JONATHAN MOWRY, A.B. (Haverford, 1890),
Harrisville, R. I.

Major Subject—German.

STEVENS, LINDLEY MURRAY, A.B. (Haverford, 1889),
East Farnham, Canada.

Major Subject—Mathematics.

TATNALL, ROBERT RICHARDSON, S.B. (Haverford, 1890),
Wilmington, Del.

Major Subject—Physics.

Earlham Fellow.

UNDERGRADUATE STUDENTS.

SENIOR CLASS.

Alger, Harry,	<i>Newport, R. I.,</i>	Arts and Science.
Blair, David Hunt,	<i>High Point, N. C.,</i>	Arts and Science.
Handy, William Winder,	<i>Baltimore, Md.,</i>	Scientific.
Hutton, John Wetherill,	<i>Westtown, Pa.,</i>	Scientific.
Mekeel, David Lane,	<i>Yorktown Heights, N. Y.,</i>	Mech. Eng.
Morris, John Stokes,	<i>Germantown, Pa.,</i>	Scientific.
Thomas, George, 3rd,	<i>Whitford, Pa.,</i>	Scientific.
Todd, Henry Arnold,	<i>Salem, Mass.,</i>	Arts and Science.

JUNIOR CLASS.

Blair, Augustine Wilberforce,	<i>Archdale, N. C.</i>	Scientific.
Brumbaugh, I. Harvey,	<i>Huntingdon, Pa.,</i>	Arts and Science.
Cadbury, Benjamin,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Cary, Egbert Snell,	<i>Baltimore, Md.,</i>	Scientific.
Collins, Minturn Post,	<i>Purchase, N. Y.,</i>	Scientific.
Cook, Charles Gilpin,	<i>Darlington, Md.,</i>	Scientific.
Dennis, Joseph Henry,	<i>Dover, N. H.,</i>	Arts and Science.
Detwiler, Warren H.,	<i>Ironbridge, Pa.,</i>	Arts and Science.
Dixon, Joseph Moore,	<i>Snow Camp, N. C.,</i>	Scientific.
Hall, Rufus Hacker,	<i>Boston, Mass.,</i>	Arts and Science.
Hart, Walter Morris,	<i>Philadelphia, Pa.</i>	Arts and Science.
Hoopes, Arthur,	<i>West Chester, Pa.,</i>	Mechanical Eng.
Jenks, William Pearson,	<i>Philadelphia, Pa.,</i>	Scientific.
McAllister, Franklin,	<i>Philadelphia, Pa.,</i>	Scientific.
Muir, John Wallingford,	<i>Philadelphia, Pa.,</i>	Scientific.
Stone, Ralph Warren,	<i>Warren, Pa.,</i>	Arts and Science.
West, Nelson Leflin,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Wood, Joseph Remington,	<i>Flushing, N. Y.,</i>	Mechanical Eng.
Yarnall, Stanley Rhoads,	<i>Media, Pa.,</i>	Arts and Science.

Brinton, Christian Frederick,	<i>Thornbury, Pa.</i>
Davis, Henry Lamont, Jr.,	<i>Germantown, Pa.</i>
Hoffman, Miles Atlee,	<i>Bryn Mawr, Pa.</i>
Nicholson, William Hopkins, Jr.,	<i>Philadelphia, Pa.</i>
Palen, Gilbert Joseph,	<i>Germantown, Pa.</i>
Parrish, Frederick Maxfield,	<i>Philadelphia, Pa.</i>
Shipley, William Ellis,	<i>Cincinnati, O.</i>

SOPHOMORE CLASS.

Bailey, Leslie Adelbert,	<i>Dresden, Me.,</i>	Arts and Science.
Brown, John Farnum,	<i>Villa Nova, Pa.,</i>	Arts and Science.
Crowther, William Mortimore,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Davis, Francis F.,	<i>Coatesville, Pa.,</i>	Scientific.
Estes, Wilbur Albert,	<i>Sprague's Mills, Me.,</i>	Arts and Science.
Gates, Thomas Sovereign,	<i>Germantown, Pa.,</i>	Arts and Science.
Haughton, John Paul,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Haviland, Walter Winchip,	<i>Glens Falls, N. Y.,</i>	Arts and Science.
Hoag, Clarence Gilbert,	<i>Roxbury, Mass.,</i>	Arts and Science.
Jacobs, Carrol Brinton,	<i>West Chester, Pa.,</i>	Arts and Science.
Jones, George Lindley,	<i>Amesbury, Mass.,</i>	Arts and Science.
Knipe, Arthur,	<i>Philadelphia, Pa.,</i>	Scientific.
Okie, John Mickle,	<i>Berwyn, Pa.,</i>	Scientific.
Osborne, Charles,	<i>North Weare, N. H.,</i>	Scientific.
Rhoads, Charles James,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Rhoads, Edward,	<i>Germantown, Pa.,</i>	Scientific.
Roberts, John,	<i>Downingtown, Pa.,</i>	Mechanical Eng.
Sensenig, Barton,	<i>Goodville, Pa.,</i>	Scientific.
Vaux, William Sansom, Jr.,	<i>Bryn Mawr, Pa.,</i>	Mechanical Eng.
Whitall, Franklin,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Wright, Gifford King,	<i>Germantown, Pa.,</i>	Arts and Science.

Lippincott, Horace Greenough, Jr.,	<i>Philadelphia, Pa.</i>
Reeves, Franklin Butler,	<i>Germantown, Pa.</i>
Taylor, James Gurney,	<i>Burlington, N. J.</i>
Wood, James Henry,	<i>Philadelphia, Pa.</i>
Woolman, Edward,	<i>Philadelphia, Pa.</i>

FRESHMAN CLASS.

Bussell, Alfred,	<i>New York, N. Y.,</i>	Scientific.
Chase, Oscar Marshall,	<i>Hazleton, Pa.,</i>	Mechanical Eng.
Collins, Charles,	<i>Purchase, N. Y.,</i>	Arts and Science.
Comfort, William,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Farr, Clifford Bailey,	<i>Wenonah, N. J.,</i>	Arts and Science.
Foulke, Edward Jeanes,	<i>Germantown, Pa.,</i>	Arts and Science.
Gardner, Larner Somers,	<i>Atlantic City, N. J.,</i>	Scientific.
Green, Kane Stovell,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Harvey, Le Roy,	<i>Wilmington, Del.,</i>	Arts and Science.
Lancaster, George,	<i>Wyoming, Pa.,</i>	Arts and Science.
Pancoast, William Howard,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Pinkham, Charles Heber,	<i>Lynn, Mass.,</i>	Arts and Science.
Quimby, Edward Entwisle,	<i>Bryn Mawr, Pa.,</i>	Scientific.
Ristine, Frederick Pearce,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Rorer, Jonathan Taylor, Jr.,	<i>Hatboro, Pa.,</i>	Arts and Science.
Scarborough, Henry Wismer,	<i>Lumberville, Pa.,</i>	Scientific.
Shoemaker, Benj. Hallowell, Jr.,	<i>Germantown, Pa.,</i>	Mechanical Eng.
Stokes, Francis Joseph,	<i>Germantown, Pa.,</i>	Arts and Science.
Strawbridge, William Justus,	<i>Germantown, Pa.,</i>	Mechanical Eng.
Taber, David Shearman, Jr.,	<i>New York, N. Y.,</i>	Arts and Science.
Thomas, Frank Smith,	<i>Baltimore, Md.,</i>	Scientific.
Warden, Herbert Watson,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Warden, Nelson Bushnell,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Williams, Parker Shortridge,	<i>Philadelphia, Pa.,</i>	Scientific.
Wood, Arnold,	<i>New York, N. Y.,</i>	Scientific.

Beale, Horace Alexander, Jr.,	<i>Parkesburg, Pa.</i>
Miller, Martin Nixon,	<i>Chestnut Hill, Pa.</i>
Morris, Howard,	<i>Parkesburg, Pa.</i>
Walker, Frank Dinwiddie,	<i>Philadelphia, Pa.</i>

SUMMARY.

Graduate Students in Residence,	12
Seniors,	8
Juniors,	26
Sophomores,	26
Freshmen,	29
	<hr/>
	101

ADMISSION.

CANDIDATES for admission to the Freshman Class in the COURSE IN ARTS AND SCIENCE will be examined as to their proficiency in the following requisites :

GREEK.—Grammar, scanning of hexameter verse ; Xenophon's *Anabasis*, four books ; Homer's *Iliad*, three books ; sight reading from Xenophon and Homer ; Jones's *Greek Composition*, twenty-five Exercises to be written with the accents.

LATIN.—Cæsar's *Gallic War*, four books ; Vergil's *Æneid*, six books ; Cicero, six orations. Sight reading from Cicero, Cæsar, and Nepos. General questions on grammar, prosody, history, and mythology suggested by the text. Translation of easy prose from English into Latin. Harkness, Parts I. and II., or Jones's Exercises will indicate the amount necessary.

NOTE.—Equivalents in Greek and Latin will be accepted. Much importance will be attached to ability to read at sight matter not previously studied.

MATHEMATICS.—Arithmetic, including the Metric System ; Algebra, through Radicals and Quadratic Equations ; Plane Geometry.

ENGLISH.—Grammar ; a short English Composition, correct in spelling, punctuation, and expression. The subject will be drawn in 1891 from Longfellow's *Evangeline* ; Carlyle's *Essay on Sir Walter Scott* ; Thackeray's *Four Georges* ; and in 1892 from Longfellow's *Hiawatha* ; Hawthorne's *Twice Told Tales* ; Carlyle's *Essay on Burns* ; and in 1893 Macaulay's *Warren Hastings* ; Irving's *Bracebridge Hall* ; Tennyson's *Elaine*.

NOTE.—Other work of equal merit and extent will be accepted as equivalent.

HISTORY.—Greek, Roman, and United States History.

MODERN LANGUAGES.—In place of the Greek the candidate may offer both German and French as follows :

German.—A thorough knowledge of the Grammar ; ability to read at sight ordinary prose or poetry, and to translate English sentences into German. The minimum amount to be read may be indicated by Whitney's *German Reader*, or Boisen's *German Prose*, Schiller's *Wilhelm Tell*, and a connected piece of prose like Storm's *Immensee* or Eichendorff's *Aus dem Leben eines Taugenichts*.

French.—Whitney's *Grammar*, Part I. ; De Rougemont's *La France* (100 pp.) ; Knapp's *French Readings* (94 pp.) ; *Télèmaque*, Books I.—III. ; *Athalie* ; Composition (Whitney's *Grammar*, Part II.).

NOTE.—Equivalents in German and French will be accepted.

Candidates for admission to the Freshman Class in the SCIENTIFIC OR ENGINEERING COURSE will be examined as follows :

LATIN.—As above.

MATHEMATICS.—As above, with the addition of the Properties and the Use of Logarithms.

ENGLISH.—As above.

HISTORY.—As above.

SCIENCE.—The elements of Physics, and Martin's *Human Body*, *Briefer course*, or an equivalent.

MODERN LANGUAGES.—*Both* German and French, as outlined above, may be substituted for the Latin of this course. This is advised in the Engineering Course.

The certificates of principals of first-class schools will, at the discretion of the President, be accepted in place of our examination, so far as they cover the ground. Such teachers must fill up blank forms furnished on application. Certificates of private tutors will not be accepted.

Students not candidates for a degree may, at the discretion of the Faculty, be admitted to pursue special courses, for proficiency in which certificates may be granted ; but this permission will be given only to students of sufficient age, ability, and diligence to insure their success.

Candidates may be admitted to advanced Classes if found on examination thoroughly fitted in all the regular studies of the Course up to the point at which they enter.

Each candidate must forward, together with his application, a certificate of good moral character from his last teacher ; and students

from other colleges must present certificates of honorable dismissal in good standing.

APPLICATIONS FOR ADMISSION must be made to the President. Entry blanks will be furnished on application. Rooms are assigned to old students in the order of seniority, and to new students in the order in which these entry blanks, properly filled up, are received at the President's office. Candidates will present themselves at Founders' Hall, for examination by the Faculty, *at 9.30 o'clock on the morning previous to Commencement Day, or at 9.30 o'clock on the morning previous to the beginning of the College Year.*

EXPENSES.

WITH the exceptions noted in the two following paragraphs, the price of Board and Tuition for undergraduates in the College Halls (together with fuel, lights, furniture* and service), is five hundred dollars (\$500) a year.

There are a few large rooms in Barclay Hall, each of which may be taken by one student at an increased cost of twenty-five dollars a year, or by two at a decreased cost to each of seventy-five dollars a year.

A few students will be taken in Woodside Cottage. The charge will be \$375 for Board and Tuition.

The charge for Tuition is one hundred and fifty dollars (\$150) a year; for Tuition and mid-day meal, two hundred dollars (\$200) a year.

The College Laundry makes a reasonable charge for washing.

Students furnish their own books and stationery, and are charged for materials consumed and breakage in the Laboratories.

The charge for Board and Tuition for Graduate Students is three hundred dollars (\$300); for Tuition alone, one hundred dollars (\$100).

Bills for Board and Tuition are payable one half at the beginning and one half at the middle of the College Year.

* Students furnish their own towels and napkins.

SCHOLARSHIPS.

A number of scholarships, varying in amount from \$100 to \$500, are at the disposal of the College.

These will be granted to properly qualified students who cannot afford to pay the full charges. In awarding the scholarships both character and intellectual preparation are taken into account. Students should send, with their application, certificates of moral character. The intellectual preparation is tested by examination. Blank forms on which the application must be written will be furnished by the President of the College. Candidates are advised to apply at an early date.

FELLOWSHIPS.

The College has received a sum of money for the purpose of establishing four Graduate Fellowships, of the annual value of \$300 each,—the whole charge for Board and Tuition. By the conditions of the donors one of these will be given to a graduate of each of the following Colleges, viz.: Haverford, Earlham, Penn, and Wilmington; *Provided*, that the student shall be recommended by the President of the College, at which he graduated, as likely to profit by the instruction given at Haverford, and that he shall be satisfactory to the Faculty of Haverford College.

Should there not be satisfactory applications for these Fellowships by Fourth month 1st, they may be otherwise disposed of.

COURSES OF INSTRUCTION.

In the Course in Arts and Science, Latin and Mathematics are required through two years. Should the student present Greek for admission, he is required to continue it for two years, and take German and French for one year. Should he present German and French for admission, he is required to continue them for two years. All these subjects may be continued as electives. Some election is allowed in the Junior year. The Senior year is largely elective.

In the Scientific Course Latin is required one year (unless the student presents German and French for admission), and Mathematics three years. Particular attention is given to the Modern Languages and the Sciences throughout the course. Electives may be taken as in the course in Arts and Science.

In the Mechanical Engineering Course, the Freshman year is nearly the same as in the Scientific Course. After this there is divergence, the Engineering student taking more Mathematics, Mechanics, Shop Work, and Drawing as required studies.

Scripture and Themes are required of all undergraduate students.

COURSE IN ARTS AND SCIENCE.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.

2. *Mathematics*. Sharpless's *Geometry*; Hall and Knight's *Higher Algebra*; Oliver, Wait, and Jones's *Trigonometry*. Four hours a week the first half-year, five the second.

3. *Greek*. (See note below.*) Lysias, *Select Orations*; Herodotus, *Selections*; Homer, *Selections*; Translations at sight; Greek Composition. Four hours a week.

4. *Latin*. Livy; The Odes and Epodes of Horace; Review of Latin Grammar; Translation at sight (Cicero, *De Senectute* and *De Amicitia*); Prose Composition. Four hours a week.

5. *Rhetoric and English Composition*. *Principles of Rhetoric* (A. S. Hill); Readings in English Prose; Composition (exercises in the class-room); Themes. Two hours a week the first half-year, one the second.

6. *Biology*. Martin's *Human Body*; Descriptive Botany with Plant Analysis. Two hours a week.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission will take the elective studies in German and French.

SOPHOMORE CLASS. .

1. *Scripture*. The Greek Testament, Luke's *Gospel*. One hour a week.

2. *Mathematics*. Introductory *Calculus*; Smith's *Analytical Geometry*; *Surveying* with Field Practice. Three hours a week.

3. *Greek*. (See note below.) Plato, *Apology* and *Crito*, or *Phaedo*; Æschylus, *Prometheus*; Aristophanes, *Frogs*; Lectures; Translation at sight (Xenophon, *Memorabilia*); Dictation Exercises in writing Greek. Three hours a week.

4. *Latin*. The *Germania* and *Agricola* of Tacitus; Selections from the Latin Poets; Cicero's *Letters*; Translations at sight (Cornelius Nepos); Prose Composition. Three hours a week.

5. *English Literature*. History of English Literature; Readings in English Poetry; Themes. Two hours a week the first half-year.

6. *History*. Outlines of Ancient History; Mediæval History. (Text-Book and Lectures.) Two hours a week the second half-year.

7. *Physics*. Stewart's *Lessons*, with Experimental Lectures, three hours a week, and Laboratory Work, two and one-half hours a week, the first half-year.

8. *Chemistry*. Elementary General Chemistry, three hours a week, and Laboratory Work, two and one-half hours a week, the second half-year.

*NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission to the Freshman Class will take elective courses in German and French.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. One hour a week.
2. *German*. (For those who have not studied the language.) Joynes-Meissner's *Grammar*; Niebuhr's *Heroengeschichten*; Boisen's *Prose Extracts*; Translations at sight; Exercises in translating English into German. Four hours a week the second half-year.
3. *French*. (For those who have not studied the language.) Whitney's *Grammar*, Part I.; De Rougemont's *La France*; Knapp's *French Readings*; Composition (Whitney's *Grammar*, Part II.). Four hours a week the first half-year.
4. *Political Science*. Political Economy; Principles of Constitutional Law. (Text-Book and Lectures). Two hours a week.
5. *Philosophy*. Logic, and Psychology. Two hours a week.
6. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 27-30 enough to make 15 hours per week with their required studies.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. Once a week.
2. *Ethics*. Two hours a week.
3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 27-30 enough to make 15 hours per week with their required studies.

SCIENTIFIC COURSE.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.

2. *Mathematics*. Sharpless's *Geometry*; Hall and Knight's *Higher Algebra*; Oliver, Wait, and Jones's *Trigonometry*; Hicks's *Mechanics*. Six hours a week the first half-year, seven the second.

3. *Latin*. Livy; The Odes and Epodes of Horace; Review of Latin Grammar; Translations at sight (Cicero, *De Senectute* and *De Amicitia*); Prose Composition. Four hours a week.

NOTE.—Students presenting for admission Modern Languages in place of Latin will substitute for the Latin of the Freshman year French and German from the elective list.

4. *Rhetoric and English Composition*. *Principles of Rhetoric* (A. S. Hill); Readings in English Prose; Composition (exercises in the class-room); Themes. Two hours a week the first half-year, one the second.

5. *Biology*. Martin's *Human Body* with Laboratory Work; Descriptive Botany with Laboratory Work. Two hours a week.

6. *Drawing*. Five hours a week.

SOPHOMORE CLASS.

1. *Scripture*. Luke's Gospel. One hour a week.

2. *Mathematics*. Smith's *Analytical Geometry*; Introductory *Calculus*; *Surveying* with Field Practice. Three hours a week.

3. *German*. Joynes-Meissner's *Grammar*; Niebuhr's *Heroengeschichten*; Boisen's *Prose Extracts*; Translations at sight; Exercises in translating English into German. Three hours a week.

4. *French*. Whitney's *Grammar*, Part I.; De Rougemont's *La France*; Knapp's *French Readings*; Composition (Whitney's *Grammar*, Part II.). Three hours a week.

NOTE.—Students presenting for admission Modern Languages in place of Latin will take advanced work in German and French instead of that outlined above.

5. *English Literature*. History of English Literature; Readings in English Poetry; Themes. Two hours a week the first half-year.

6. *History*. Outlines of Ancient History; Mediæval History. (Text-Book and Lectures.) Two hours a week the second half-year.

7. *Physics*. Stewart's *Lessons*, with Experimental Lectures, three hours a week, and Laboratory Work, two and one-half hours a week, the first half-year.

8. *Chemistry*. Elementary General Chemistry, three hours a week, and Laboratory Work, two and one-half hours a week, the second half-year.

9. *Biology*. Invertebrate and Vertebrate Morphology; Lectures and Laboratory Work. Two hours a week.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Teachings of Christ. One hour a week.

2. *Mathematics*. Analytical Geometry of Three Dimensions; Calculus. Three hours a week.

3. *German*. Lessing's *Minna Von Barnhelm*; Eichendorff's *Aus dem Leben eines Taugenichts*; Goethe's *Iphigenie*; Exercises in German Composition (based on Whitney's German Grammar). Three hours a week.

4. *French*. Knapp's *French Readings*; *Télémaque*; *Athalie*; Composition (Whitney's *Grammar*, Part II.); Lectures on the Language and Literature; Private Reading. (Examinations will be held upon some of the books suggested.) Three hours a week.

5. *Political Science*. Political Economy; Principles of Constitutional Law. (Text-Book and Lectures.) Two hours a week.

6. *Philosophy*. Logic, and Psychology. Two hours a week.

7. *Chemistry*. General and Analytical Chemistry; Lectures and Laboratory Work. Two hours a week.

8. *Physics*. Heat or Electricity; Experimental Lectures. Two hours a week the second half-year.

NOTE.—Students who have had two years in French and German may take studies from the elective list in their place.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scriptures*. Life and Teachings of Christ. One hour a week.

2. *Ethics*. Two hours a week.

3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 27-30 enough to make 15 hour per week with their required studies.

MECHANICAL ENGINEERING COURSE.

In the first two years of the Engineering Course the same work is required as in the Scientific Course, except that Shop Work and Mechanical Drawing take the place of History and Biology.

Students are advised to substitute French and German for the Latin of the Freshman year.

During the last two years students in Mechanical Engineering give their time to Mathematics, Shop Work, Drawing, study of the Materials of Engineering, the Theory of Constructions, and other special Engineering work.

Scripture and Themes are required through the four years, a course in Chemistry in the Junior year, and a course in Ethics in the Senior year.

ELECTIVE COURSES.

Seniors and Juniors will elect from the following list, with the approbation of the Faculty, sufficient to make up the required number of hours.

HEBREW.

Grammar. Old Testament. Reading. [Prof. Harris. 3.]*

GREEK.

I. History of Greek Literature. Lectures; Selections for Reading.

[Prof. Gifford. 3.]

II. Selections from the Greek Orators; Æschylus; Pindar; Lectures on Greek Art and Antiquities.

[Prof. Gifford. 3.]

III. Sophocles; Euripides; Thucydides; Dictation exercises in writing Greek.

[Prof. Gifford. 3.]

IV. Patristic Greek, especially the Sub-Apostolic Literature.

[Prof. Harris. 2.]

V. Advanced Criticism of the New Testament.

[Prof. Harris. 2.]

Courses I. and II. are given in alternate years.

* These figures represent the number of hours per week. In Laboratory Work, etc., two and a half hours count as one.

LATIN.

I. Horace, *Ars Poetica*; Juvenal, *Thirteen Satires*; Suetonius, *Divus Julius* and *Divus Augustus*; Tacitus, Selections from *Annals* and *History*; Plautus, *Captivi*; *Trinummus*; Cicero, Selections from Philosophical Works.

[Prof. Sanford. 3.]

II. Readings from the following authors will occupy two hours each week during the College year. Pliny, *Letters*; Virgil, *Bucolics*; Terence, *Adelphi*; Lucretius, Catullus, Tibullus, Propertius, Ovid, Lucan.

One hour each week during the year will be occupied as follows: During the first half, Lectures and Examinations on Topography of Italy, and particularly on the Topography, Buildings, Statuary, etc., of Ancient Rome; during the second half of the year an outline of the whole of Roman Literature.

[Prof. Sanford. 3.]

ENGLISH.

I. ANGLO-SAXON.—Sweet, *Anglo-Saxon Reader*; Cynewulf's *Elene*; Lectures.

[Prof. Gummere. 2.]

II. ENGLISH LITERATURE IN THE FOURTEENTH CENTURY. Chaucer's *Canterbury Tales*. Lectures.

[Prof. Gummere. 1.]

III. SHAKSPERE.—*Lear*, *Hamlet*, *Tempest*, *As You Like It*; Lectures on Elizabethan Poetry.

[Prof. Gummere. 2.]

This course will be omitted in 1891-92.

IV. ADVANCED ENGLISH COMPOSITION.—Exercises in Composition; Discussion of special work; Readings in English Prose.

[Prof. Gummere. 1.]

Only those who have attained good rank in themes for the Freshman and Sophomore years will be admitted to this class. Members of it will be exempted from regular theme work.

V. ENGLISH LITERATURE OF THE EIGHTEENTH AND NINETEENTH CENTURIES. Selections from Representative Authors; Lectures; Private Readings.

[Prof. Gummere. 2.]

GERMAN.

I. MIDDLE-HIGH-GERMAN.—Paul, *Mittelhochdeutsche Grammatik*. Selections from the Poems of Walther von der Vogelweide. *Das Nibelungenlied*.

[Prof. Gummere. 2.]

II. GOETHE AND SCHILLER.—*Faust*; *Wallenstein*; Selected Poems. History of German Literature; Exercises in German Composition.

[Prof. Gummere. 3.]

III. Lessing's *Minna von Barnhelm*; Selections from German Prose; Exercises in German Composition.

[Prof. Gummere. 3.]

FRENCH.

I. Darmesteter and Hatzfeld's *Le Seizième Siècle en France*; Clédat's *Morceaux Choisis des Auteurs Français du Moyen Age*. Lectures; Themes in French; Private Reading. [Prof. Ladd. 2.]

II. Daudet's *Contes*; Blouët's *L'Eloquence de la Chaire Française*; Corneille's *Le Cid*; Racine's *Phèdre*; Crane's *Le Romantisme Français*; Hugo's *Hernani*. Exercises in Composition and Idioms; Lectures on the Language and Literature; Private Reading. [Prof. Ladd. 3.]

III. Knapp's *French Readings*; Crane's *Tableaux de la Révolution Française*; *Télémaque*. Composition (Whitney's Grammar, Part II.); Lectures on the Language and Literature; Private Reading. [Prof. Ladd. 3.]

IV. Classical Juniors may continue the work outlined in Courses 3, page 24, the second half-year. [Prof. Ladd. 2.]

MATHEMATICS.

I. Analytical Geometry of Three Dimensions; Calculus. [Prof. Morley. 3.] Elective for Classical Juniors or Seniors.

II. Introduction to Differential Equations; Dynamics. [Prof. Morley. 3.]

III. Introduction to the Theory of Plane Curves. [Prof. Morley. 3.]

IV. Introduction to the Theory of Functions. [Prof. Morley. 3.]

Courses III. and IV. will be given in alternate years.

HISTORY AND POLITICAL SCIENCE.

I. Mediæval and Modern European History. [Prof. Thomas. 2.]

II. Political and Constitutional History of England from the Anglo-Saxon Conquest to the Restoration. [Prof. Thomas. 3.]

III. Political and Constitutional History of England from the Restoration to the present time. [Prof. Thomas. 3.]

Courses II. and III. are intended to be given in alternate years.

IV. American Colonial History to 1783; Europe and America during the Eighteenth Century. [Prof. Thomas. 3.]

V. Constitutional and Political History of the United States, 1783 to 1865. [Prof. Thomas. 3.]

Courses IV. and V. are intended to be given in alternate years.

VI. Theory of the State. [Prof. Thomas. 2.]

VII. Ecclesiastical History. The Doctrines and Discipline of the Church as far as the first council of Nicæa (A.D. 325). [Prof. Harris. 3.]

ASTRONOMY.

I. Practical Astronomy, with Observatory Practice. [Prof. Leavenworth. 2.]

II. Descriptive Astronomy. (Half Year.) [President Sharpless. 2.]

CHEMISTRY.

- I. General Chemistry ; Lectures and Laboratory Work. [Prof. L. B. Hall. 2 or 4.]
- II. Analytical Chemistry ; Lectures and Laboratory Work. [Prof. L. B. Hall. 2 or 4.]
- III. Organic Chemistry ; Lectures and Laboratory Work. [Prof. L. B. Hall. 2.]

BIOLOGY.

- I. Invertebrate Morphology. [Dr. W. S. Hall. 2.]
 - II. Vertebrate Morphology. [Dr. W. S. Hall. 2.]
 - III. Vertebrate Histology. [Dr. W. S. Hall. 2.]
 - IV. Embryology. [Dr. W. S. Hall. 2.]
- Courses I. and III. will be given the first half-year, and Courses II. and IV. the second half-year.

GEOLOGY.

- Elementary Geology. (Half Year.) [Dr. W. S. Hall. 2.]

ENGINEERING.

- I. Materials of Construction ; Theory of the Steam Engine. [Prof. Edwards. 2.]
- II. Machine Design and Draughting. (Open only to Engineering Students.) [Prof. Edwards. 2.]
- III. Shop Work. [Prof. Edwards. 2.]

PHYSICS.

- I. Mathematical Physics. [Prof. Crew. 3.]
 - II. Physical Optics ; Lectures and Laboratory Work. [Prof. Crew. 2.]
 - III. Theory of Heat and Electricity ; Laboratory Work. [Prof. Crew. 2.]
- Courses II. and III. will be given in alternate years.

LECTURES.

The Lectures and Courses of Lectures to the whole college for the year 1889-90 were as follows:

<i>Peace and Arbitration</i>	WILLIAM JONES.
<i>Preventive Medicine,</i>	D. HAYES AGNEW, M.D.
<i>Education as a Profession,</i>	HON. W. T. HARRIS.
<i>Journalism,</i>	CHARLES E. FITCH.
<i>Russian Nihilists and Novelists,</i>	PROF. H. H. BOYESEN.

GRADING OF STUDENTS.

Students are divided, according to their grades, into five sections, A, B, C, D, E. Each student is notified of the section to which he has been assigned, but the grades are not published. Section E is composed of these who cannot be advanced to the next higher class, nor receive their Bachelor's degree. Daily recitations, hour examinations, and final examinations are all used as elements in determining the standing of a student.

ADVANCED DEGREES.

BACHELORS OF ARTS, BACHELORS OF SCIENCE, and BACHELORS OF ENGINEERING of three years' standing may take the degrees of MASTER OF ARTS, or MASTER OF SCIENCE, on submitting to the Executive Committee satisfactory evidence of continued good character, and passing an examination on some literary or scientific course of study which shall receive the approbation of the Faculty and Managers.

The following are stated as adequate courses of study to be presented by candidates for the second degree. Particulars can be had on application to the President.

I. Hebrew. Mitchell's Gesenius' Hebrew Grammar. 'Critical and philological reading and analysis of I. and II. Samuel; I. and II. Kings. Sight reading of Genesis, unpointed (edition of Muehlau et Kautzsch, Lipsiæ, 1885).

II. Assyrian. Lyon's Assyrian Manual. Friedrich Delitzsch's Assyrische Lesestücke. Syllabare (Sb. Sc.) S. 53-75. Neuassyrische Text, (S. 110, 4-121).

III. The whole of the New Testament in Greek, with the introductions to N. T. of Scrivener, and of Westcott and Hort.

IV. The whole of Thucydides, together with Grote and Curtius on the Peloponnesian War; Greek composition.

V. Twelve Tragedies of Æschylus, Sophocles, or Euripides; Greek composition.

Note.—A course similar to IV. and V. may be arranged in other Greek authors.

VI. Cicero's Tusculan Disputations (five books), De Natura Deorum and De Officiis, together with the History of Ancient Philosophy; Latin composition.

VII. Mommsen's and Merivale's Histories; the whole of Tacitus; Pliny's Letters; Latin composition.

VIII. German Literature, with translation at sight from any of the leading authors, and an essay in German.

IX. French Literature, with translation at sight from any of the leading authors, and an essay in French.

X. Greek Literature, with translation at sight from any of the leading authors and an essay in Greek.

XI. Latin Literature, with translation at sight from any of the leading authors, and an essay in Latin.

XII. Pure Mathematics. Two of the following:

a. Introduction to the Theory of Plane Curves (Salmon).

- b.* Theory of Equations and Substitutions (Burnside and Panton, Netto).
- c.* Elliptic Functions.
- d.* Introduction to the Theory of Functions.
- e.* Differential Equations.

The course will require a knowledge of the Differential and Integral Calculus such as is implanted by the works of Williamson or Byerly.

XIII. Applied Mathematics. Two of the following :

- a.* Partial Differential Equations (Riemann).
- b.* Statics (Minchin).
- c.* Rigid Dynamics.

The course will require a knowledge of Analytical Geometry of Three Dimensions, of the Differential and Integral Calculus, and of the Simpler Applications of the Calculus to dynamical questions.

XIV. Theoretical Astronomy (Computation of an Orbit—Oppolzer, Watson, or Gauss).

XV. Practical Astronomy (Chauvenet and Doolittle) ; Observatory Work.

XVI. Rankine's Applied Mechanics, or Rankine's Civil Engineering.

XVII. European History, Political, Constitutional, Economic.

XVIII. American History ; Political, Constitutional, Economic.

Courses in History can be arranged by consultation with the Professor in charge of the department.

XIX. Ecclesiastical History. A general knowledge of the leading facts in Early Church History and an acquaintance with Greek and Latin will be required : a special subject may be selected from the following :

- a.* The writings of Barnabas and Justin and the Teaching of the Twelve Apostles.
- b.* The Clementine and Ignatian Epistles.
- c.* The Development of Christian Institutions (Stanley, Hatch, etc.).
- d.* The Ecclesiastical History of Eusebius.

XX. Germanic Philology and Literature. (One of the following to be selected) :

a. *Anglo-Saxon*.—Grein's *Bibliothek der angelsächsischen Poesie* ; Sweet's Edition (Early English Text Society) of the Anglo-Saxon Version of the *Cura Pastoralis* ; Cook's Sievers' Anglo-Saxon Grammar. A knowledge of Gothic Grammar is required in this as in the next course.

b. *Middle High German*.—*Das Nibelungenlied* ; Walther von der Vogelweide ; *Gudrun* ; History of Early German Literature ; Old High German Grammar.

c. *Old Norse*. A course similar to *a* and *b* can be arranged in Old Norse Literature and Philology.

XXI. English Literature. An intimate acquaintance with the authors of some characteristic epoch will be required, and a good English style, manifested in an original essay.

XXII. Physics. Any two of the following, with Laboratory work. Mechanics (Sturm); Fluid Motion (Lamb); Thermodynamics (Clausius); Electricity and Magnetism (part of Mascart and Joubert); Acoustics (Donkin); Geometrical Optics (Heath); Physical Optics (Preston).

The laboratory work required will, in general, be along the lines of the student's reading, and will consist either in the skillful repetition of some piece of research or in some independent work of scientific value.

XXIII. Comparative Morphology.

XXIV. General Pathology.

XXV. Comparative Embryology.

XXVI. Chemistry.

XXVII. Political Economy.

} Courses in these subjects can be arranged
by consultation with the Professor in charge
of the department.

Dissertations may be required in addition to examinations.

Candidates who are examined may also, if they desire, hand in Dissertations on topics in the field of study which they have specially investigated.

Resident Graduates, who have completed an adequate course of study, may be admitted to an examination for a second degree before the expiration of three years, if the Faculty deem it proper.

Graduates of other Colleges and Scientific Schools of good standing, who present satisfactory evidence of character and qualifications, will be admitted as candidates for the degree of Master of Arts. One years' residence at Haverford College will be required of all such students.

Bachelors of Arts and Science may be examined for the degrees of DOCTOR OF PHILOSOPHY and DOCTOR OF SCIENCE; but such degrees will be conferred only after satisfactory proof of the faithful and successful prosecution of courses of study fully equal in extent and quality to those required for similar honors in the best Universities.

Notice of application for examination must be given to the President two months before Commencement. The examinations for non-residents will be held during the last week in the Fifth month, and in no case at a later date. The fee for the Diploma of the Second Degree is Twenty Dollars, of subsequent degrees, Thirty Dollars, to be paid in all cases before the 10th of the Sixth month.

ALUMNI PRIZE FOR COMPOSITION AND ORATORY.

THE Association of the Alumni, in the year 1875, established an ANNUAL PRIZE either of a Gold Medal, or of an equivalent value in Books and a Bronze Medal, for excellence in Composition and Oratory.

The prize was awarded last year to HENRY LEE GILBERT, of the class of 1890, for his oration on "Church and Socialism."

The following are the Rules governing the competition :

I. The Alumni Medal is offered yearly to the competition of the members of the Senior and Junior Classes, as a prize for the best delivered oration prepared therefor. The oration to be handed in to the Professor of English not later than Twelfth month first.

II. Three or five Judges shall be appointed from year to year by the Alumni Committee, who shall, on the evening of the last evening but one before the winter vacation, hear publicly, in Alumni Hall, all competitors who may be qualified to appear.

III. No oration shall occupy in delivery more than fifteen minutes.

IV. In making their award, while due weight is given to the literary merits of the oration, the Judges are to consider the prizes as offered to encourage more especially the attainment of excellence in elocution.

V. The Judges shall have the right to withhold the prize if the elocution and the literary merits of the oration fall below a suitable standard of excellence.

PRIZES FOR SYSTEMATIC READING.

Two prizes, of \$60 and \$40 respectively, will be given to those members of the Junior Class who, having creditably pursued their regular studies and paid proper attention to physical culture, shall have carried on the most profitable courses of reading of standard authors during their Sophomore and Junior years.

The direction of the work and the decision as to the award of the prizes shall be in the hands of a committee consisting of the President, the Librarian, and the Professor of English.

Either or both prizes may be omitted if, in the judgment of the committee, the work done does not justify the award.

LIBRARY.

LIBRARIAN, Professor Allen C. Thomas ; Charles T. Cottrell, *Assistant*.

THE number of bound volumes in the Library of Haverford College is about 25,000; exclusive of the Baur Library the number is 17,990. Numerous American and European periodicals, scientific and literary, are taken by the Library.

Through the liberality of friends of the College the theological and miscellaneous library of the late Gustav Baur, for many years Professor of Theology in the University of Leipsic, was bought and given to the College in 1889. It consists of about 7000 volumes, besides several thousand pamphlets. It is rich in theology, Oriental languages, and in German literature. It is now being classified, and a card catalogue will be prepared.

From Walter Wood and Professor J. Rendel Harris were received in 1890, forty-seven manuscripts, collected by Professor Harris while in the East. They are chiefly oriental, and have been fully catalogued and described in Haverford College Studies No. 4.

The Library is open as a reading-room from 9 A. M. to 6 P. M., during which time the volumes in the alcoves may be freely consulted. The Librarian devotes stated hours each week to the purpose of assisting and directing students in their reading, and in the intelligent use of books of reference and of authorities. He also arranges courses of reading.

CHEMICAL LABORATORY.

DIRECTOR, Dr. Lyman B. Hall.

THE Laboratory Work comprises elementary experiments in General Chemistry; an extended study of the more important elements and their compounds; qualitative and quantitative analysis; the preparation of pure compounds; and experimental work illustrating chemical laws and theories. The course in Organic Chemistry requires one afternoon of laboratory work through the year.

Students may substitute for the last two years of the Scientific Course a special course in Chemistry, embracing both theory and laboratory work.

Opportunity is given for elementary or advanced special work, with ample facilities for its prosecution.

PHYSICAL LABORATORY.

DIRECTOR, DR. Henry Crew.

THE Physical Laboratory occupies five medium-sized rooms, and is well equipped for work in the various departments of physics, especially in electrical measurements.

The students are assigned work in the accurate measurement of various physical quantities in mechanics, heat, light, and electricity. They also perform a number of qualitative experiments leading up to a more intimate knowledge of the properties of matter.

Most of the qualitative work, however, the student is expected to see performed on the lecture table.

Students may substitute for the last two years of the Scientific Course a special Course in Electricity. This will include laboratory and class-room work; the former will be devoted mainly to the accurate measurement of electrical quantities; while the latter will be divided into two parts, the first year being spent upon the theory, and the second upon the application of electricity.

BIOLOGICAL LABORATORY.

DIRECTOR, Dr. W. S. Hall.

STUDENTS taking the Scientific Course work in the laboratory two and one-half hours a week during the Freshman and Sophomore years.

Practical Physiology.—First half-year. Dissections; experiments in physiological chemistry, and with electricity, nicotine, and alcohol.

Practical Botany.—Second half-year. Gross and minute structure of types of each plant series.

I. *Invertebrate Morphology*.—First half of second year. Gross and minute anatomy of representative types,—following Brooks's *Invertebrate Zoology*.

II. *Vertebrate Morphology*.—Last half of second year. Gross anatomy of fish, frog, turtle, pigeon, and cat; lectures and demonstrations on comparative anatomy of the vertebrate.

III. *Vertebrate Histology*.—Elective half-year. Microscopic study of tissues taken from animals dissected in Course II.

IV. *Embryology*.—Elective half-year. Embryology of the chick. Special facilities for Courses III. and IV. are afforded by the new Minot microtome, the camera for photo-micrography, a $\frac{1}{8}$ inch oil immersion lens, etc.

MUSEUM.

CURATOR, Dr. W. S. Hall.

ORNITHOLOGY, Mineralogy, Geology, Conchology, and Paleontology are well represented. The specimens in each department are classified and catalogued, and are used by students and lecturers in the class-room and laboratories.

MECHANICAL LABORATORY.

DIRECTOR, Professor Levi T. Edwards.

THE MECHANICAL LABORATORY occupies a commodious building erected in 1890, especially for the Engineering Department. It contains a machine shop, carpenter shop, blacksmith shop, foundry, draughting room, blue-printing room, and store room. The machine shop contains, besides several complete sets of machinists' tools for vise work, several lathes, a planer, shaper, drill press, vises, etc. The carpenter shop contains several complete sets of carpenters' tools, two wood lathes, a band saw, and a circular saw. The foundry and blacksmith shop are well equipped.

The instruction begins with a series of graded exercises, which teach accuracy in the use of tools and illustrate the principles of machine construction. This is followed by practice in the construction of parts of machinery and the building of complete machines.

The students, under the care of the Director, are taken from time to time to visit machine shops and engineering constructions in Philadelphia and its vicinity.

ASTRONOMICAL OBSERVATORY.

DIRECTOR, Professor F. P. Leavenworth.

THE HAVERFORD OBSERVATORY affords the students the means of becoming familiar with the use of astronomical instruments, and of acquiring, from actual observation, a practical acquaintance with Astronomy.

It contains two Equatorial Telescopes, one by Clark, having an object-glass 10 inches in diameter, and one with an object-glass of

8 $\frac{1}{4}$ inches, with filar micrometer and eye-pieces; a polarizing eye-piece; a Newtonian Reflector, with a silver-on-glass speculum of 8 $\frac{1}{4}$ inches diameter; a Prism Spectroscope; a Meridian Transit Circle, having a Telescope of 3 $\frac{3}{4}$ inches aperture, with a circle at each end of the axis 26 inches in diameter; a Zenith Instrument of 1 $\frac{3}{4}$ inches aperture, with a micrometer; two Sidereal Clocks, one with mercurial compensation, the other used to connect with a Bond's Magnetic Chronograph.

The latitude of the observatory is 40° 0' 40'' N.; its longitude, 6 minutes 59.4 seconds East from Washington.

A Special Course in Astronomy is offered to amateurs and teachers. The requisites for the course and the fees charged will depend on the work which the applicant desires to perform.

THE GYMNASIUM.

DIRECTOR, Dr. W. S. Hall.

THE GYMNASIUM is fitted with the apparatus of Dr. D. A. Sargent, of Harvard University. The Director gives systematic instruction based upon careful physical examination. Required work begins Twelfth month 1st and ends Fourth month 1st, and occupies three hours each week. It is arranged in three courses, each occupying one season. Students entering the Freshman Class are required to take the three courses, one each year, unless given advanced standing on previous systematic gymnasium drill. Students entering the Sophomore Class are required to complete two of the courses, with a privilege of taking advanced standing.

LITERARY SOCIETIES.

THE LOGANIAN SOCIETY was established by the Officers and Students in 1834.

THE EVERETT-ATHENÆUM is a literary society of the students.

DEGREES GRANTED IN 1890.

At the Commencement in 1890 Degrees were granted in course to the following graduates :

DOCTOR OF PHILOSOPHY.

ROBERT WILLIAM ROGERS.

MASTER OF ARTS.

JOHN HENRY ALLEN.	BARKER NEWHALL.
CHARLES HENRY BURR, JR.	FRANK WARRINGTON PEIRSON.
WILLIAM ROSS DUNTON.	CHARLES EDGAR PRITCHARD.
WILLIAM BRADFORD EATON.	WILLIAM CHRISTOPHER SAYRS.
HOWELL STROUD ENGLAND.	CHARLES ERNEST TERRELL.
ARTHUR WINSLOW JONES.	FRANK EARLE THOMPSON.
ARTHUR NEWLIN LEEDS.	CHARLES HERBERT THURBER.
FREDERICK NEILSON VAIL.	

BACHELOR OF ARTS.

JAY HOWE ADAMS.	GUY HULETT DAVIES,
EDWARD MOTT ANGELL.	ROBERT EASTBURN FOX.
JAMES STUART AUCHINCLOSS.	HENRY LEE GILBERT.
WILLIAM GRATTAN AUDENRIED, JR.	WILLIAM GRANT JENKINS.
HENRY RYAN BRINGHURST, JR.	THOMAS STORY KIRKBRIDE.
CHARLES THURSTON COTTRELL.	JONATHAN MOWRY STEERE.

BACHELOR OF SCIENCE.

THOMAS AMORY COFFIN.	EDWIN JAMES HALEY.
PERCY SMEDLEY DARLINGTON.	DILWORTH POTTS HIBBERD.
WILLIAM MOORE GUILFORD, JR.	ROBERT RICHARDSON TATNALL.
JOHN NOBLE GUSS.	ALFRED COLLINS TEVIS.

BACHELOR OF ENGINEERING.

JOHN F. TAYLOR LEWIS.	WILLIAM PERCY SIMPSON,
EDWARD RHODS LONGSTRETH.	ERNEST FORSTER WALTON.

DOCTOR OF LAWS.

The degree of Doctor of Laws was bestowed *honoris causa* upon
JOSEPH JOHN MILLS.

LIST OF GRADUATES AND HONORARY DEGREES.

(Degrees conferred by other institutions are indicated by *italics*.)

GRADUATES.

- | | |
|--|--|
| <p style="text-align: center;">1836</p> <p>Thomas F. Cock, <i>M.D.</i>, LL.D.
Joseph Walton</p> <p style="text-align: center;">1837</p> <p>*William C. Longstreth, *1881
*David C. Murray, *1885
Lindley Murray
*Benjamin V. Marsh, *1882
*Joseph L. Pennock, *1870
Robert B. Parsons
*Charles L. Sharpless, *1882
*Lloyd P. Smith, A.M., *1886
*B. Wyatt Wistar, *1869</p> <p style="text-align: center;">1838</p> <p>*James V. Emlen, <i>M.D.</i>, *1880
John Elliott</p> <p style="text-align: center;">1839</p> <p>Frederick Collins
Thomas P. Cope
Henry Hartshorne, <i>M.D.</i>, A.M., LL.D.
Nereus Mendenhall, <i>M.D.</i>
Richard Randolph, Jr., <i>M.D.</i>
*Charles Taber, *1837</p> <p style="text-align: center;">1840</p> <p>*Joseph Howell, *1889
Anthony M. Kimber
*Henry H. G. Sharpless, *1870
*John R. Winslow, <i>M.D.</i>, *1866</p> <p style="text-align: center;">1841</p> <p>*Richard H. Lawrence, *1847
*James P. Perot, *1872
*Elias A. White, *1866</p> <p style="text-align: center;">1842</p> <p>Robert Bowne
Richard Cadbury
*William S. Hilles, *1876
Thomas Kimber, Jr., LTT.D.
James J. Levick, <i>M.D.</i>, A.M.
Edmund Rodman
Thomas R. Rodman
Benjamin R. Smith
Augustus Taber
Caleb Winslow, <i>M.D.</i></p> | <p style="text-align: center;">1843</p> <p>Robert B. Howland
Francis White
*William D. Stroud, <i>M.D.</i>, *1883</p> <p style="text-align: center;">1844</p> <p>Evan T. Ellis
Robert B. Haines
Isaac Hartshorne</p> <p style="text-align: center;">1845</p> <p>Edmund A. Crenshaw
*Robert Pearsall, *1849</p> <p style="text-align: center;">1849</p> <p>Albert K. Smiley, A.M.
Alfred H. Smiley, A.M.</p> <p style="text-align: center;">1851</p> <p>Joseph L. Bailey
Philip C. Garrett
Thomas J. Levick
Franklin E. Paige, A.M.
Zaccheus Test, <i>M.D.</i>, A.M.
James C. Thomas, <i>M.D.</i>, A.M.
Richard Wood</p> <p style="text-align: center;">1852</p> <p>Dougan Clark, <i>M.D.</i>
Lewis N. Hopkins
William L. Kinsman
William E. Newhall
James Whitall</p> <p style="text-align: center;">1853</p> <p>William B. Morgan, A.M.
William H. Pancoast, <i>M.D.</i>, A.M.</p> <p style="text-align: center;">1854</p> <p>Frederick Arthur, Jr.
John W. Cadbury
John B. Garrett
David Scull, Jr.</p> <p style="text-align: center;">1855</p> <p>*Samuel Bettle, *1859
John R. Hubbard, A.M.</p> |
|--|--|

1856

Bartholomew W. Beesley
 Joel Cadbury, Jr.
 Jonathan J. Comfort, *M.D.*
 *James M. Walton, *1874
 Edward R. Wood, A.M.

1857

Jesse S. Cheyney, A.M.
 *Cyrus Mendenhall, *1858
 Stephen Wood

1858

Thomas H. Burgess
 Thomas Clark
 Daniel W. Hunt
 *Samuel T. Satterthwaite, *1865
 William G. Tyler
 Thomas Wistar, A.M., *M.D.*
 Ellis H. Yarnall, *LL.B.*

1859

*Richard W. Chase, *1862
 James R. Magee
 *Richard C. Paxson, *1864
 *Edward Rhoads, *M.D.*, *1871
 Edward C. Sampson
 *George Sampson, *1872
 Abram Sharples, *M.D.*
 Benjamin H. Smith

1860

*Lindley M. Clark, *1861
 *William B. Corbit, *M.D.*, *1882
 *William M. Corlies, *1881
 Cyrus Lindley
 Theodore H. Morris
 Frederick W. Morris
 Richard Pancoast
 John W. Pinkham, *M.D.*
 Francis Richardson
 Clement L. Smith, A.M., *LL.D.*
 James Tyson, *M.D.*, A.M.
 Silas A. Underhill, *LL.B.*

1861

Edward Bettie, Jr.
 *Henry Bettie, *1886
 *Charles Bettie, *1883
 William B. Broomall
 Charles H. Jones
 *Thomas W. Lamb, A.M., *M.D.*, *1878
 William N. Potts
 Jehu H. Stuart, A.M., *M.D.*
 John C. Thomas

1862

Henry T. Coates, A.M.
 *Samuel A. Hadley, *1864
 Horace G. Lippincott

George B. Mellor
 Horace Williams, *M.D.*
 Isaac F. Wood.

1863

Thomas J. Battey, A.M.
 George M. Coates, Jr., A.M.
 William M. Coates
 *Richard T. Jones, *1869
 William H. Morris
 Joseph G. Pinkham, *M.D.*, A.M.

1864

*Franklin Angell, A.M., *1882
 *William Ashbridge, *M.D.*, *1884
 Edward H. Coates
 Howard M. Cooper, A.M.
 Albin Garrett
 Morris Longstreth, *A.B.*, *M.D.*, A.M.
 Albert Pancoast
 Charles Roberts
 E. Pope Sampson
 *Edward L. Scull, *1884
 *Randolph Wood, *1876

1865

John R. Bringhurst
 Edward T. Brown
 James A. Chase
 Joseph M. Downing
 Arthur Haviland
 *David H. Nichols, *1865
 Henry W. Sharpless
 *George Smith, Jr., *1872
 Robert B. Taber, A.M.
 Allen C. Thomas, A.M.
 Benjamin A. Vail
 Caleb Cresson Wistar

1866

A. Marshall Elliott, A.M.
 Benjamin E. Valentine, *LL.B.*

1867

*John Ashbridge, *1881
 George Ashbridge, A.M., *LL.B.*
 William P. Clark, A.M., *LL.B.*
 Samuel C. Collins, A.M.
 Nathaniel B. Crenshaw
 Charles H. Darlington, A.M.
 *William T. Dorsey, *M.D.*, *1870
 B. Franklin Eshleman
 Richard M. Jones, A.M.
 *Charles W. Sharpless, *1889
 Walter Wood

1868

Edward H. Cook
 *Alexis T. Cope, *1883
 Benjamin C. Satterthwaite

Louis Starr, *M.D.*
S. Finley Tomlinson
Joseph H. Wills, A.M., *M.D.*

1869

Johns H. Congdon
Henry Cope, A.M.
Ludovic Estes, *A.M.*
*Henry Evanl, A.M., *1877
*William B. Kaighn, *1876
Pendleton King, A.M.
William H. Randolph
Edward B. Taylor, *M.C.E.*
William S. Taylor
James G. Whitlock
Walter Wood
Henry Wood, *Ph.D.*

1870

J. Stuart Brown
John E. Carey
Alford G. Coale
Howard Comfort
T. Allen Hilles
William H. Hubbard, *M.D.*
*Thomas K. Longstreth, A.M., *1883
Oliver G. Owen, A.M.
Charles E. Pratt, A.M.
David F. Rose
*John D. Steele, *1886
Charles Wood, A.M.
Stuart Wood, *Ph.D.*

1871

Henry G. Brown
William P. Evans
John S. Garrigues
Reuben Haines, A.M.
William H. Haines
Joseph Hartshorne
Jesse F. Hoskins
Walter T. Moore
Ellis B. Reeves
Alfred R. Roberts, *C.E.*
Charles S. Taylor
Edward D. Thurston
Randolph Winslow, *M.D.*, A.M.

1872

Richard Ashbridge, *M.D.*
Richard T. Cadbury, A.M., *A.B.*, *A.M.*
James Carey, Jr., *LL.B.*
Thomas S. Downing, Jr.
Walter Erben
Thomas Roland Estes
John E. Forsythe
William H. Gibbons, A.M.
Francis B. Gummere, A.M., *Ph. D.*
Casper Wistar Haines, A.M., *C.E.*
Abram Francis Huston
*Marmaduke Cope Kimber, A.M., *1878
William M. Longstreth
Richard H. Thomas, *M.D.*

1873

James C. Comfort.
Thomas P. Cope, Jr.
George W. Emlen
Joseph M. Fox
Henry C. Haines
Benjamin H. Lowry, A.M.
Alden Sampson, A.M.
*Julius L. Tomlinson, A.M., 1890

1874

Edward P. Allinson, A.M.
John G. Bullock
James Emlen
Charles R. Hartshorne, *LL.B.*
Samuel E. Hilles
John B. Jones
*Mahlon Kirkbride, *1889.
Theophilus P. Price
James B. Thompson
Joseph Trotter

1875

Edward K. Bispham
Alonzo Brown, A.M.
J. Franklin Davis, A.M.
Charles E. Haines
William Hunt, Jr.
Charles L. Huston
Harold P. Newlin
Walter W. Pharo
Charles E. Tebbetts
Miles White, Jr.

1876

Francis G. Allinson, A.M., *Ph.D.*
David S. Bispham
Reuben Colton
Henry W. Dudley
Seth K. Gifford, A.M.
L. Lyndon Hobbs, A.M.
Richard H. Holme
*Thomas William Kimber, *1885
Charles A. Longstreth
J. Whitall Nicholson
Percival Roberts, Jr.
Frank H. Taylor
Howard G. Taylor
*Lewis A. Taylor, *1881

1877

A. B.

Isaac W. Anderson
Frederic L. Bailly
Isaac Forsythe
James D. Krider
George G. Mercer, *LL.M.*, *J.C.D.*
Wilson Townsend

S. B.

William F. Smith

1878

A.B.

Henry Baily, A.M.
 Albert L. Baily
 Francis K. Carey, *LL.B.*, A.M.
 Edward T. Comfort
 Charles S. Crosman, *LL.B.*
 Samuel H. Hill
 Lindley M. H. Reynolds
 Daniel Smiley, Jr.
 Henry L. Taylor, A.M., *M.D.*
 John M. W. Thomas
 George W. White

S.B.

Jonathan Eldridge
 Edward Forsythe
 Cyrus P. Frazier, *A.B.*
 Robert B. Haines, Jr.
 Henry N. Stokes, *Ph.D.*

1879

A.B.

Samuel Bispham, Jr.
 Edward Gibbons
 John H. Gifford, *M.D.*
 Francis Henderson, *LL.B.*
 William C. Lowry
 John B. Newkirk
 John E. Sheppard, Jr., *M.D.*

1880

A.B.

Charles F. Brede
 Charles E. Cox
 Josiah P. Edwards
 James L. Lynch
 Samuel Mason, Jr.
 William F. Perry
 Joseph Rhoads, Jr., A.M.

S.B.

William Bishop
 Alexander P. Corbit
 Charles E. Gause, Jr.
 Edward M. Jones

1881

A.B.

William A. Blair
 A. Morris Carey
 Levi T. Edwards, A.M.
 Edward Y. Hartshorne
 Isaac T. Johnson, A.M.
 Edwin O. Kennard
 Jesse H. Moore
 William E. Page
 Walter F. Price, A.M., *A.M.*
 Thomas N. Winslow
 John C. Winston

S.B.

Walter Brinton
 William H. Collins
 Joseph H. Cook
 Davis H. Forsythe
 Albanus L. Smith
 1882
 A.B.
 George A. Barton, A.M., *A.M.*
 Isaac M. Cox
 Richard B. Hazard
 Wilmot R. Jones
 *Wilmer P. Leeds, *1885
 J. Henley Morgan
 Edward Randolph

S.B.

John E. Coffin
 Daniel Corbit
 George L. Crosman
 Frederic D. Jones
 T. Chalkley Palmer
 Lindley M. Winston

1883

A.B.

John Blanchard, *LL.B.*
 Frank E. Briggs
 George H. Evans
 Francis B. Stuart
 Bond V. Thomas
 Thos. K. Worthington, *LL.B.*, *Ph.D.*

S.B.

William L. Baily
 Stephen W. Collins
 D. William Edwards
 William E. Scull
 Samuel B. Shoemaker, *M.D.*
 John D. Spruance
 W. Alpheus White
 Charles H. Whitney
 Louis B. Whitney

1884

A.B.

John Henry Allen, A.M.
 Orren William Bates
 Thomas Herbert Chase
 William J. Haines
 Arthur D. Hall
 Charles R. Jacob
 Alfred Percival Smith, *LL.B.*

S.B.

Louis T. Hill
 Walter L. Moore
 George Vaux, Jr., *LL.B.*

L.B.

Francis A. White

1885

A.B.

Samuel Bettle
 Enos L. Doan
 William T. Ferris
 William S. Hilles
 William T. Hussey
 Arthur W. Jones, A.M.
 Rufus M. Jones, A.M.
 Joseph L. Markley, A.M., *A.M., Ph.D.*
 Marriott Canby Morris
 Augustus T. Murray
 Augustus H. Reeve
 William F. Reeve
 Isaac Sutton, *A.M.*
 Elias H. White
 William F. Wickersham

S.B.

Charles W. Bailly
 John J. Blair
 Thomas Newlin
 Theodore W. Richards, *A.M., Ph.D.*
 Matthew T. Wilson

1886

A.B.

Jonathan Dickinson, Jr.
 Alexander H. Scott
 Horace E. Smith
 Edward D. Wadsworth, *LL.B.*

S.B.

Thomas W. Betts
 Guy R. Johnson
 William S. McFarland
 Israel Morris, Jr.
 William P. Morris
 Alfred M. Underhill, Jr.
 Wilfred W. White

1887

A.B.

Edward B. Cassatt
 William H. Futrell
 Alfred C. Garrett, *A.B.*
 Henry H. Goddard, A.M.
 Willis H. Hazard
 Barker Newhall, A.M.
 Jesse E. Philips, Jr.
 Henry W. Stokes
 Frederick H. Strawbridge
 Richard J. White
 George B. Wood
 William C. Wood

S.B.

*Arthur H. Bailly, *1889
 Charles H. Bedell

Horace Y. Evans, Jr.
 Hugh Lesley

B.E.

P. Hollingsworth Morris

1888

A.B.

E. Morris Cox
 Howell S. England, A.M.
 Allison W. Slocum, A.M.
 Martin B. Stubbs, A.M.

S.B.

Charles H. Battey
 John C. Corbit, Jr.
 Morris E. Leeds
 Henry V. Gummere, A.M., *A.M.*
 Francis C. Hartshorne
 Joseph T. Hilles
 George B. Roberts
 Joseph W. Sharp

B.E.

Lawrence P. Beidelman
 Joseph E. Johnson, Jr.
 Frederick W. Morris, Jr.

1889

A.B.

Robert C. Banes
 Thomas F. Branson
 Charles H. Burr, Jr., A.M.
 Thomas Evans
 Warner H. Fite
 Warren C. Goodwin
 Victor M. Haughton
 Franklin B. Kirkbride
 Daniel C. Lewis
 Lawrence J. Morris
 William F. Overman
 Frank W. Peirson, A.M.
 Samuel Prioleau Ravenel, Jr.
 Walter George Reade
 Lindley M. Stevens
 John Stogdell Stokes
 *Layton W. Todhunter, 1889
 Frederick N. Vail, A.M.
 Gilbert C. Wood

S.B.

William R. Dunton, A.M.
 Arthur N. Leeds, A.M.
 Joseph H. Painter
 David J. Reinhardt
 Frank E. Thompson, A.M.

B.E.

Herbert Morris
 Richard J. Morris

1890

A.B.

Jay Howe Adams
 James Stuart Auchincloss
 William G. Audenried, Jr.
 Henry R. Bringham, Jr.
 Charles T. Cottrell
 Guy H. Davies
 Robert E. Fox
 Henry L. Gilbert
 William G. Jenkins
 Thomas S. Kirkbride
 Jonathan M. Steere

S.B.

Thomas Amory Coffin
 Edward M. Angell
 Percy S. Darlington
 William M. Guilford, Jr.
 John N. Guss
 Edwin J. Haley
 Robert R. Tatnall
 Dilworth P. Hibberd
 Alfred C. Tevis

B.E.

John F. Taylor Lewis
 Edward R. Longstreth
 William Percy Simpson
 Ernest Forster Walton

Whole number of graduates, 467.

HONORARY DEGREES.

1858

Hugh D. Vail, A.M.

1859

*Joseph W. Aldrich, A.M., *1865

1860

John G. Whittier, A.M.

1864

Edward D. Cope, A.M.

1867

Joseph Moore, A.M.

1872

William Jacobs, A.M.

1875

*Samuel Alsop, Jr., A.M., *1888

1876

*Pliny E. Chase, LL.D., *1886

1877

John J. Thomas, A.M.

1879

Ellis Yarnall, A.M.

1880

Thomas Chase, LTT.D.
 Thomas Hughes, LL.D.

1883

James Wood, A.M.
 Henry N. Hoxie, A.M.

1884

Joseph Parrish, A.M.
 Elijah Cook, A.M.

1885

Robert Howland Chase, A.M.

1886

Edward H. Magill, LL.D.

1890

Joseph John Mills, LL.D.

Haverford College Studies.

CONTENTS OF No. 1.

The Library of the Convent of the Holy Sepulchre at Jerusalem ;
J. Rendel Harris.

Work of Haverford College Observatory ; F. P. Leavenworth.

On the Geometry of a Nodal Circular Cubic ; Frank Morley.

On the Period of Rotation of the Sun ; Henry Crew.

On the Symbolic Use of the Colors Black and White in Germanic
Tradition ; Francis B. Gummere.

CONTENTS OF No. 2.

The Rest of the Words of Baruch ; J. Rendel Harris.

Some Esarhaddon Inscriptions ; Robert W. Rogers.

CONTENTS OF No. 3.

The Passion of Perpetua ; J. Rendel Harris and Seth K. Gifford.

On Some Properties of the Triangle ; Frank Morley.

CONTENTS OF No. 4.

On the Numerical Characteristics of a Cubic Curve ; Charlotte
Angas Scott.

On the Caustic of the Epicycloid ; Frank Morley.

Sun-spot Observations ; H. V. Gummere and F. P. Leavenworth.

On a New Manuscript of the Four Gospels ; W. C. Braithwaite.

A Catalogue of Manuscripts (chiefly Oriental) in the Library of
Haverford College ; Robert W. Rogers.

The Passion of Perpetua ; translated by Seth K. Gifford.

Specimens of Uncial Lectionaries from Mount Sinai ; J. Rendel
Harris.

CONTENTS OF No. 5.

The Diatessaron of Tatian, a Preliminary Study ; J. Rendel
Harris.

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The Secretary of Haverford College,

Haverford College P. O., Pa.

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OF
HAVERFORD COLLEGE.



1891-92.

CATALOGUE

OF

HAVERFORD COLLEGE.

(HAVERFORD COLLEGE P. O., PA.)

1891-92.



Philadelphia:

PRESS OF FERRIS BROTHERS

SEVENTH AND FILBERT STREETS

CALENDAR.

College Year 1891-92 began	9th Mo. 23
Alumni Prize Orations	12th Mo. 22
Winter Recess begins	12th Mo. 23
Winter Term begins, 1891*	1st Mo. 5
Mid-year Examinations begin	1st Mo. 23
Second Half-year begins	2d Mo. 1
Junior Exercises	4th Mo. 14
Spring Recess begins	4th Mo. 15
Spring Term begins*	4th Mo. 26
Alumni Meeting	6th Mo. 20
Examinations for Admission, 9.30 A. M. . . .	6th Mo. 20
Commencement Day, 1892	6th Mo. 21

VACATION OF THIRTEEN WEEKS.

Examinations for Admission, 9.30 A. M. . . .	9th Mo. 20
College Year 1892-93 begins*	9th Mo. 21
Alumni Prize Orations	12th Mo. 22
Winter Recess begins	12th Mo. 23
Winter Term begins 1893*	1st Mo. 4
Second Half-year begins 1893	2d Mo. 1
Junior Exercises	4th Mo. 13
Spring Recess begins	4th Mo. 14
Spring Term begins	4th Mo. 25
Alumni Meeting	6th Mo. 19
Examinations for Admission, 9.30 A. M. . . .	6th Mo. 19
Commencement Day, 1893	6th Mo. 20

* The first recitations are due promptly at *half-past nine o'clock* at the beginning of each term. No absences from them are excused, unless clearly unavoidable.

CONTENTS.

Calendar,	2
History and Description,	4
Corporation,	8
Faculty,	9
Graduate Students,	11
Undergraduate Students,	13
Seniors,	13
Juniors,	14
Sophomores,	15
Freshmen,	16
Summary of Students,	17
Admission,	18
Expenses,	20
Scholarships,	21
Fellowships,	21
Courses of Instruction for Undergraduates,	22
Course in Arts and Science,	23
Scientific Course,	25
Mechanical Engineering Course,	27
Course Preparatory to the Study of Medicine,	27
Elective Courses,	28
Lectures,	31
Grading of Students,	31
Advanced Degrees and Graduate Instruction,	32
Alumni Prize,	34
Prizes for Systematic Reading,	35
Honors,	35
Library,	36
Chemical Laboratory,	37
Physical Laboratory,	37
Biological Laboratory,	38
Museum,	38
Mechanical Laboratory,	39
Astronomical Observatory,	39
Gymnasium,	40
Literary Societies,	40
Degrees granted in 1891,	41
List of Graduates and Honorary Degrees,	42

HISTORY AND DESCRIPTION.

IN the spring of 1830, a meeting of a few Friends in Philadelphia, shortly followed by a similar meeting in New York, originated Haverford School. The joint committee expressed the object of the effort as follows: "The members of the Society of Friends, having hitherto labored under great disadvantages in obtaining for their children a guarded education in the higher branches of learning, combining the requisite literary instruction with a religious care over the morals and manners of the scholars, . . . and carefully preserving them from the influence of corrupt principles and evil communications, it is therefore proposed that an institution be established in which the children of Friends shall receive a liberal education in ancient and modern literature, and the mathematical and other sciences."

The \$40,000 supposed to be necessary was raised without effort, and the committee went out to seek a location. They say: "We wished to procure a farm in a neighborhood of unquestioned salubrity—within a short distance of a Friends' meeting—of easy access from this city at all seasons of the year, . . . and that was recommended by the beauty of the scenery and retired situation." Then they go on to say, that of the many places presented to them the only one which combined all the advantages was one of 198½ acres (since increased to 215), "near the eight-mile stone on the Lancaster Turnpike." They explain the present and prospective merits of the farm, the beauty of the natural woods, the unfailing springs of purest water, the nearness to the new Pennsylvania Railroad, in words which the succeeding half-century has amply justified.

On the 28th of Tenth Month, 1833, the school opened with 21 students. Provisions had been made for three teachers and a superintendent.

"A Teacher of Ancient Languages and Ancient Literature.

"A Teacher of English Literature, and of Mental and Moral Philosophy.

"A Teacher of Mathematics and Natural Science."

The Superintendent was to have charge of the order and domestic economy of the family.

The regulations of the new school were rigid. The bounds and time of the boys were very strictly marked out. All the details of the daily programme were arranged with great care ; and if the elaborate provision of a number of wise men for the normal growth of students could convert boys into perfect men, the students of Haverford of fifty years ago had every advantage.

The High School thus established grew rapidly into prosperity and debt. The charges were low, the teachers were liberally paid, and the years which followed were marked by a constant endeavor to produce a maximum of good fruits from very limited funds. The deficiencies were made up in a liberal spirit, and a constant growth maintained by frequent subscriptions. All the time the school was justifying the effort by the quality of its results, and making for itself an increasing number of friends.

One of the first acts of the committee, after the absolute necessities of the school were provided for, was to construct a gymnasium, and make arrangements for systematical physical work. They were determined that the advantage gained by the salubrity of the surroundings should not be lost for want of exercise. Under their care the lawn was graded at great expense, and foreign and native trees set out, with the design to make it a great arboretum. Cricket was introduced, a game not known elsewhere in America, and has always flourished since. A greenhouse and flower garden were established and maintained for twenty years by the work of the boys. The ideas that have done harm elsewhere, that schools were places for mental development only, had no foothold here, but morals, muscle, and senses received their due share of culture.

In 1845 a temporary suspension was decreed, to allow the funds to accumulate and give time for the collection of an endowment, which suspension lasted for three years. In 1852 the observatory was built, and supplied with an 8-inch equatorial and 4-inch transit. In 1856 the school was changed to a college, and authorized by the Legislature to grant degrees, but previous to this time the course had been as extended as in many colleges. It was still hampered with a large preparatory department, which was not abolished till 1861. In 1863 the Alumni Hall and Library were built. In 1876-7 Barclay Hall, containing private dormitories and study-rooms, was erected, at a cost of

\$82,000, which was collected by subscription. The Chemical Laboratories were perfected in 1878. The new Observatory was built in 1883, the Mechanical Laboratory established in 1884, and a new building erected in 1890, the Biological Laboratory was established in 1886, and the Physical Laboratory in 1888. Chase Hall, for lecture and recitation rooms, was built in 1888.

During this time Haverford had developed into a fully organized college. Many rules, adapted to boys of a boarding-school age, had been modified or abandoned, though enough of restraint was retained to provide against demoralization. The standard of admission was raised. Students of any denomination were admitted, though Friends still retained the general control. The number of teachers was increased five-fold. By various donations and bequests the endowment fund was enlarged. The annual charge was increased from \$200 to \$500,* which still fails to represent what the college has to pay for professors' salaries and board and care of students. Retaining the old idea of a "guarded education" and "a religious care over morals and manners," the college has sought to effect these results, and has measurably succeeded, rather by appeals to Christian principle and manliness than by arbitrary power.

In Barclay Hall, the hall of residence, two students occupy a study-room, and each has his private, adjoining bed-room. A few single rooms are also provided. Recitation-rooms, laboratories, and dining-room are in Founders' Hall. The Library and Observatory are in separate buildings near by. Some of the professors live in the halls with the students, and others have cottages on the grounds.

The college has a remarkably pleasant and healthful location in the township of Haverford, Delaware County,† Pa., nine miles west of Philadelphia, on the Pennsylvania Railroad. The buildings are surrounded by grounds of about sixty acres, tastefully laid out, and adorned with well-kept lawns, and a great variety of trees and shrubbery. These grounds comprise excellent fields for cricket, base-ball, foot-ball, tennis and other field games, a running and bicycle track, and a pond for skating.

The courses of study are designed to give a liberal education. Their scope will be seen on the following pages. Religious instruction

* The price may vary, depending on the situation of the room, from \$375 to \$525. Most of the rooms involve a payment of \$500.

† Haverford College *Post-Office* is in Montgomery County.

is carefully provided. In addition to the daily reading of the Holy Scriptures, recitations in the English or Greek New Testament or in Scripture History are required of the student once a week. By exposition and collateral information the instructors endeavor to enforce the true meaning of the lessons. Haverford College desires to inculcate the simple truths of the Christian religion.

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Professor of Greek.

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and Professor of Latin.

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Professor of Mechanical Engineering.

WILLIAM COFFIN LADD, A.M.,
Professor of French.

FRANCIS B. GUMMERE, PH.D.,
Professor of English and German.

*Arranged primarily as Professors, Instructors, etc.; secondarily in the order of appointment.

HAVERFORD COLLEGE.

FRANK MORLEY, A.M.,

Professor of Pure Mathematics.

FRANCIS P. LEAVENWORTH, A.M.,

Director of the Observatory.

WINFIELD SCOTT HALL, M.S., M.D.,

*Instructor in Biology (David Scull Foundation).**Instructor in Physical Training.*

ERNEST WILLIAM BROWN, A.M.,

Instructor in Applied Mathematics.

JOSEPH OSGOOD THOMPSON, PH.D.,

Instructor in Physics.

GEORGE H. BICKFORD, A.B.,

Instructor in English and in Physical Training.

JOHN H. BECHTEL,*Instructor in Elocution.*

GEORGE A. BARTON, PH.D.,

Instructor in Bible Languages.

ROBERT S. DEBOW, PH.D.,

Instructor in Philosophy.

JONATHAN MOWRY STEERE, A.B.,

Secretary of the College.

WILLIAM HENRY COLLINS, S.B.,

Assistant in the Observatory.

J. WETHERILL HUTTON, S.B.,

Assistant in the Library.

GRADUATE STUDENTS.

GIFFORD, ELMER H., S.B. (Penn, 1888),
Penn Fellow.
Oskaloosa, Ia.
Major Subject—Physics.

HUBBARD, BYRON CHARLES, S.B. (Earlham, 1891),
Earlham Fellow.
Monrovia, Ind.
Major Subject—Engineering.

HUTTON, JOHN WETHERILL, S.B. (Haverford, 1891),
Haverford Fellow.
Westtown, Pa.
Major Subject—Political Science.

MEKEEL, DAVID LANE, S.B. (Haverford, 1891),
Haverford Fellow.
Yorktown Heights, N. Y.
Major Subject—Mechanical Engineering.

MORRIS, JOHN STOKES, S.B. (Haverford, 1891),
Haverford Fellow.
Germantown, Pa.
Major Subject—Mathematics.

OVERMAN, WILLIAM FRANKLIN, A.B. (Haverford, 1889),
Haverford Fellow.
Jenkintown, Pa.
Major Subject—Physics.

ROBINSON, LUCIAN MOORE, A.B. (Harvard, 1882),
Philadelphia, Pa.
Major Subject—Germanic Philology.

* STATLER, FRANK B., A.B. (Wilmington, 1891),
Wilmington, O.
Wilmington Fellow.
Major Subject—Greek.

STEERE, JONATHAN MOWRY, A.B. (Haverford, 1890),
Harrisville, R. I.
Major Subject—Germanic Philology.

* Deceased Eleventh month 24th, 1891.

UNDERGRADUATE STUDENTS.

SENIOR CLASS.

Blair, Augustine Wilberforce,	<i>Archdale, N. C.,</i>	Scientific.
Brumbaugh, I. Harvey,	<i>Huntingdon, Pa.,</i>	Arts and Science.
Cadbury, Benjamin,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Cary, Egbert Snell,	<i>Baltimore, Md.,</i>	Scientific.
Collins, Minturn Post,	<i>Purchase, N. Y.,</i>	Scientific.
Cook, Charles Gilpin,	<i>Glenville, Md.,</i>	Scientific.
Dennis, Joseph Henry,	<i>Dover, N. H.,</i>	Arts and Science.
Detwiler, Warren H.,	<i>Ironbridge, Pa.,</i>	Arts and Science.
Hall, Rufus Hacker,	<i>Boston, Mass.,</i>	Arts and Science.
Hart, Walter Morris,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Jenks, William Pearson,	<i>Philadelphia, Pa.,</i>	Scientific.
McAllister, Franklin,	<i>Philadelphia, Pa.,</i>	Scientific.
Muir, John Wallingford,	<i>Philadelphia, Pa.,</i>	Scientific.
Stone, Ralph Warren,	<i>Warren, Pa.,</i>	Arts and Science.
West, Nelson Leflin,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Wood, Joseph Remington,	<i>Flushing, N. Y.,</i>	Scientific.
Yarnall, Stanley Rhoads,	<i>Media, Pa.,</i>	Arts and Science.

Brinton, Richard,	<i>Thornbury, Pa.</i>
Nicholson, William Hopkins, Jr.,	<i>Philadelphia, Pa.</i>
Palen, Gilbert Joseph,	<i>Germantown, Pa.</i>
Shipley, William Ellis,	<i>Cincinnati, O.</i>

JUNIOR CLASS.

Bailey, Leslie Adelbert,	<i>Dresden, Me.,</i>	Arts and Science.
Brown, John Farnum,	<i>Villa Nova, Pa.,</i>	Arts and Science.
Davis, Francis F.,	<i>Coatesville, Pa.,</i>	Scientific.
Estes, Wilbur Albert,	<i>Sprague's Mills, Me.,</i>	Arts and Science.
Haughton, John Paul,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Haviland, Walter Winchip,	<i>Glens Falls, N. Y.,</i>	Arts and Science.
Hoag, Clarence Gilbert,	<i>Roxbury, Mass.,</i>	Arts and Science.
Jacobs, Carrol Brinton,	<i>West Chester, Pa.,</i>	Arts and Science.
Jones, George Lindley,	<i>Union Springs, N. Y.,</i>	Arts and Science.
Morton, Arthur Villiers,	<i>Philadelphia, Pa.</i>	Mechanical Eng.
Okie, John Mickle,	<i>Berwyn, Pa.</i>	Scientific.
Osborne, Charles,	<i>North Weare, N. H.,</i>	Scientific.
Rhoads, Charles James,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Rhoads, Edward,	<i>Germantown, Pa.,</i>	Scientific.
Roberts, John,	<i>Downingtown, Pa.,</i>	Mechanical Eng.
Sensenig, Barton,	<i>Goodville, Pa.,</i>	Scientific.
Vaux, William Sansom, Jr.,	<i>Bryn Mawr, Pa.,</i>	Mechanical Eng.
Whitall, Franklin,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Wright, Gifford King,	<i>Germantown, Pa.,</i>	Arts and Science.
Woolman, Edward,	<i>Philadelphia, Pa.,</i>	Scientific.

SOPHOMORE CLASS.

Busselle, Alfred,	<i>New York, N. Y.,</i>	Mechanical Eng.
Chase, Oscar Marshall,	<i>Hazleton, Pa.,</i>	Mechanical Eng.
Collins, Charles,	<i>Purchase, N. Y.,</i>	Arts and Science.
Comfort, William,	<i>Germantown, Pa.,</i>	Arts and Science.
DeCou, John Allen,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Farr, Clifford Bailey,	<i>Wenonah, N. J.,</i>	Arts and Science.
Gardner, Larner Somers,	<i>Atlantic City, N. J.,</i>	Scientific.
Greene, Kane Stovell,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Lancaster, George,	<i>Wyoming, Pa.,</i>	Arts and Science.
Morris, Samuel Wheeler,	<i>Philadelphia, Pa.,</i>	Scientific.
Pinkham, Charles Heber,	<i>Woodfords, Me.,</i>	Arts and Science.
Quimby, Edward Entwisle,	<i>Philadelphia, Pa.,</i>	Scientific.
Rex, Frank Clayton,	<i>East Nantmeal, Pa.,</i>	Arts and Science.
Ristine, Frederick Pearce,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Rorer, Jonathan Taylor, Jr.,	<i>Hatboro, Pa.,</i>	Arts and Science.
Scarborough, Henry Wismer,	<i>Carversville, Pa.,</i>	Scientific.
Stokes, Francis Joseph,	<i>Germantown, Pa.,</i>	Arts and Science.
Strawbridge, William Justus,	<i>Germantown, Pa.,</i>	Mechanical Eng.
Taber, David Shearman, Jr.,	<i>New York, N. Y.,</i>	Arts and Science.
Williams, Parker Shortridge,	<i>Wynnerwood, Pa.,</i>	Scientific.

Beale, Horace Alexander, Jr.,	<i>Parkesburg, Pa.</i>
Miller, Martin Nixon,	<i>Chestnut Hill, Pa.</i>
Pancoast, William Howard,	<i>Philadelphia, Pa.</i>
Shoemaker, Benj. Hallowell, Jr.,	<i>Germantown, Pa.</i>
Warden, Herbert Watson,	<i>Philadelphia, Pa.</i>
Warden, Nelson Bushnell,	<i>Philadelphia, Pa.</i>

FRESHMAN CLASS.

Bettle, Samuel,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Blanchard, Edmund, Jr.,	<i>Bellefonte, Pa.,</i>	Arts and Science.
Brown, Francis Head,	<i>Nicetown, Pa.,</i>	Scientific.
Conklin, Frank Henry,	<i>Brooklyn, N. Y.,</i>	Arts and Science.
Cookman, Charles Howland,	<i>Wilmington, Del.,</i>	Arts and Science.
Dean, George Brookhouse,	<i>Cincinnati, O.,</i>	Scientific.
Evans, Joseph Spragg, Jr.,	<i>West Chester, Pa.,</i>	Arts and Science.
Goodman, William,	<i>Cincinnati, O.,</i>	Mechanical Eng.
Hay, Erroll Baldwin,	<i>Philadelphia, Pa.,</i>	Scientific.
Johnson, Charles Hadley,	<i>Topeka, Kan.,</i>	Scientific.
Lippincott, George,	<i>Wyncote, Pa.,</i>	Arts and Science.
Male, Jonathan Tamblyn,	<i>Beech Pond, Pa.,</i>	Arts and Science.
Miller, Harry March,	<i>Oxford, Pa.,</i>	Scientific.
Morris, Alfred Paul,	<i>Pottstown, Pa.,</i>	Mechanical Eng.
Palmer, Louis Jaquette,	<i>West Chester, Pa.,</i>	Arts and Science.
Taylor, Charles Clifford,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Thomas, Allen Curry,	<i>Philadelphia, Pa.,</i>	Scientific.
Thomas, Henry Evan,	<i>Philadelphia, Pa.,</i>	Scientific.
Webster, Walter Coates,	<i>West Grove, Pa.,</i>	Scientific.
Wood, Grahame,	<i>Philadelphia, Pa.,</i>	Scientific.

Carter, Charles Lybrand,	<i>Singerly, Md.</i>
Derderian, Nazaret K.,	<i>Constantinople.</i>
Griffith, Joseph Henry O.,	<i>Philadelphia, Pa.</i>
O'Neill, John Lamond,	<i>Haverford College, Pa.</i>
Supplee, William Wagner,	<i>Gulf Mills, Pa.</i>
Tatnall, Samuel Alsop,	<i>Wilmington, Del.</i>

SUMMARY.

Graduate Students,	9
Seniors,	21
Juniors,	20
Sophomores,	26
Freshmen,	26
	<hr/>
	102

ADMISSION.

CANDIDATES for admission to the Freshman Class in the COURSE IN ARTS AND SCIENCE will be examined as to their proficiency in the following requisites:

GREEK.—Grammar, scanning of hexameter verse; Xenophon's *Anabasis*, four books; Homer's *Iliad*, three books; sight reading from Xenophon and Homer; Jones's *Greek Composition*, twenty-five Exercises to be written with the accents.

LATIN.—Cæsar's *Gallic War*, four books; Vergil's *Æneid*, six books; Cicero, six orations. Sight reading from Cicero, Cæsar, and Nepos. General questions on grammar, prosody, history, and mythology suggested by the text. Translation of easy prose from English into Latin. Harkness, Parts I. and II., or Jones's Exercises will indicate the amount necessary.

NOTE.—Equivalents in Greek and Latin will be accepted. Much importance will be attached to ability to read at sight matter not previously studied.

MATHEMATICS.—Arithmetic, including the Metric System; Algebra, through Radicals and Quadratic Equations; Plane Geometry.

ENGLISH.—Grammar; a short English Composition, correct in spelling, punctuation, and expression. The subject will be drawn in 1892 from Longfellow's *Hiawatha*; Hawthorne's *Twice Told Tales*; Carlyle's *Essay on Burns*; in 1893 from Macaulay's *Warren Hastings*; Irving's *Bracebridge Hall*; Tennyson's *Elaine*; and in 1894 from Macaulay's two *Essays on Dr. Johnson*, Scott's *Lady of the Lake*, and Thackeray's *English Humourists*.

NOTE.—Other work of equal merit and extent will be accepted as equivalent.

HISTORY.—Greek, Roman, and United States History.

MODERN LANGUAGES.—In place of the Greek the candidate may offer *both* German and French as follows:

German.—A thorough knowledge of the Grammar; ability to read at sight ordinary prose or poetry, and to translate English sentences into German. The minimum amount to be read may be indicated by

Whitney's *German Reader*, or Boisen's *German Prose*, Schiller's *Wilhelm Tell*, and a connected piece of prose like Storm's *Immensee* or Eichendorff's *Aus dem Leben eines Taugenichts*.

French.—A thorough knowledge of the Grammar (Edgren's recommended); ability to read at sight ordinary prose or poetry, and to translate English sentences into German. The minimum amount to be read may be indicated by Super's *French Reader* (50 pp.), Knapp's *French Readings* (118 pp.), *Mlle. de la Sciglière*, *Esther*.

NOTE.—Equivalents in German and French will be accepted.

Candidates for admission to the Freshman Class in the SCIENTIFIC OR ENGINEERING COURSE will be examined as follows:

LATIN.—As above.

MATHEMATICS.—As above, with the addition of the Properties and the Use of Logarithms.

ENGLISH.—As above.

HISTORY.—As above.

SCIENCE.—The elements of Physics, and Martin's *Human Body*, *Briefer course*, or an equivalent.

MODERN LANGUAGES.—Both German and French, as outlined above, may be substituted for the Latin of this course. This is advised in the Engineering Course.

The certificates of principals of first-class schools will, at the discretion of the President, be accepted in place of entrance examinations, so far as they cover the ground. Such teachers must fill up blank forms furnished on application. Certificates of private tutors will not be accepted.

Students not candidates for a degree may, at the discretion of the Faculty, be admitted to pursue special courses, for proficiency in which certificates may be granted; but this permission will be given only to students of sufficient age, ability, and diligence to insure their success.

Candidates may be admitted to advanced Classes if found on examination thoroughly fitted in all the regular studies of the Course up to the point at which they enter.

Each candidate must forward, together with his application, a certificate of good moral character from his last teacher; and students from other colleges must present certificates of honorable dismissal in good standing.

APPLICATIONS FOR ADMISSION must be made to the President. Entry blanks will be furnished on application. Rooms are assigned to old students in the order of seniority, and to new students in the order in which these entry blanks, properly filled up, are received at the President's office. Candidates will present themselves at Founders' Hall, for examination by the Faculty, *at 9.30 o'clock on the morning previous to Commencement Day, or at 9.30 o'clock on the morning previous to the beginning of the College Year.*

EXPENSES.

WITH the exceptions noted in the two following paragraphs, the price of Board and Tuition for undergraduates in the College Halls (together with fuel, lights, furniture,* and service) is five hundred dollars (\$500) a year.

There are a few large rooms in Barclay Hall, each of which may be taken by one student at an increased cost of twenty-five dollars a year, or by two at a decreased cost to each of seventy-five dollars a year.

A few students will be taken in Woodside Cottage. The charge will be \$375 for Board and Tuition.

The charge for Tuition is one hundred and fifty dollars (\$150) a year; for Tuition and mid-day meal, two hundred dollars (\$200) a year.

The College Laundry makes a reasonable charge for washing.

Students furnish their own books and stationery, and are charged for materials consumed and breakage in the Laboratories.

The charge for Board and Tuition for Graduate Students is three hundred dollars (\$300); for Tuition alone, one hundred dollars (\$100).

Bills for Board and Tuition are payable one-half at the beginning and one-half at the middle of the College Year.

* Students furnish their own towels and napkins. It will also be found convenient in many cases to supply their own study-room furniture.

SCHOLARSHIPS.

A FEW scholarships, varying in amount from \$100 to \$500, are at the disposal of the College.

These will be granted to properly qualified students who cannot afford to pay the full charges. In awarding the scholarships both character and intellectual preparation are taken into account. Students should send, with their application, certificates of moral character. The intellectual preparation is tested by examination. Blank forms on which the application must be written will be furnished by the President of the College. Candidates are advised to apply at an early date.

FELLOWSHIPS.

THE College has received a sum of money for the purpose of establishing four Graduate Fellowships, of the annual value of \$300 each,—the whole charge for Board and Tuition. By the conditions of the donors one of these will be given to a graduate of each of the following Colleges, viz.: Haverford, Earlham, Penn, and Wilmington; *Provided*, that the student shall be recommended by the President of the College at which he graduated, as likely to profit by the instruction given at Haverford, and that he shall be satisfactory to the Faculty of Haverford College.

Should there not be satisfactory applications for these Fellowships by Fourth month 1st, they may be otherwise disposed of.

COURSES OF INSTRUCTION.

IN THE Course in Arts and Science, Latin and Mathematics are required through two years. Should the student present Greek for admission, he is required to continue it for two years, and take German and French for one year. Should he present German and French for admission, he is required to continue them for two years. All these subjects may be continued as electives. Some election is allowed in the Junior year. The Senior year is largely elective.

In the Scientific Course, Latin is required one year (unless the student presents German and French for admission), and Mathematics two years. Particular attention is given to the Modern Languages and the Sciences throughout the course. Electives may be taken as in the course in Arts and Science.

In the Mechanical Engineering Course, the Freshman year is nearly the same as in the Scientific Course. After this there is divergence, the Engineering student taking more Mathematics, Mechanics, Shop Work, and Drawing as required studies.

Scripture and Themes are required of all undergraduate students.

In the Elective Courses in the two upper years, which are taken with the advice and consent of the Faculty, students are expected to select studies having some relation to each other. In many cases it is desirable to concentrate the work in one department. The "Honor" System (see page 35) will, it is hoped, promote this object.

COURSE IN ARTS AND SCIENCE.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.
2. *Mathematics*. Sharpless's *Geometry*; Hall and Knight's *Higher Algebra*; Oliver, Wait, and Jones's *Trigonometry*. Four hours a week the first half-year, five the second.
3. *Greek*. (See note below.) Lysias, *Select Orations*; Herodotus, *Selections*; Homer, *Selections*; Translations at sight; Greek Composition. Four hours a week.
4. *Latin*. Livy; The Odes and Epodes of Horace; Review of Latin Grammar; Translation at sight (Cicero, *De Senectute* and *De Amicitia*); Prose Composition. Four hours a week.
5. *Rhetoric and English Composition*. *Principles of Rhetoric* (A. S. Hill); Readings in English Prose; Composition (exercises in the class-room); Themes. Two hours a week for the first half-year, one the second.
6. *Biology*. Martin's *Human Body*; Descriptive Botany with Plant Analysis. Two hours a week.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission will take elective studies in German and French.

SOPHOMORE CLASS.

1. *Scripture*. The Greek Testament, Luke's Gospel. One hour a week.
2. *Mathematics*. Smith's *Analytical Geometry*; Introductory *Calculus*; *Surveying*, with Field Practice. Three hours a week.
3. *Greek*. (See note below.) Plato, *Apology* and *Crito*, or *Phaedo*; Æschylus, *Prometheus*; Aristophanes, *Frogs*; Lectures; Translation at sight (Xenophon, *Memorabilia*); Dictation Exercises in writing Greek. Three hours a week.
4. *Latin*. The *Germania* and *Agricola* of Tacitus; Selections from the Latin Poets; Cicero's *Letters*; Translations at sight (Cornelius Nepos); Prose Composition. Three hours a week.
5. *English Literature*. History of English Literature; Readings in English Poetry; Themes. Two hours a week the first half-year.
6. *History*. Outlines of Ancient History; Mediæval History. (Text-Book and Lectures.) Two hours a week the second half-year.
7. *Physics*. Stewart's *Lessons*, with Experimental Lectures, three hours a week, and Laboratory Work, two and one-half hours a week, the first half-year.
8. *Chemistry*. Elementary General Chemistry, three hours a week, and Laboratory Work, two and one-half hours a week, the second half-year.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission to the Freshman Class will take elective courses in German and French.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. One hour a week.
2. *German*. (For those who have not studied the language.) Joynes-Meissner's *Grammar*; Niebuhr's *Heroengeschichten*; Boisen's *Prose Extracts*; Translations at sight; Exercises in translating English into German. Four hours a week the second half-year.
3. *French*. (For those who have not studied the language.) Whitney's *Grammar*, Part I.; De Rougemont's *La France*; Knapp's *French Readings*; Composition (Whitney's *Grammar*, Part II.). Four hours a week the first half-year.
4. *Political Science*. Political Economy; Principles of Constitutional Law (Text-Book and Lectures). Two hours a week.
5. *Philosophy*. Logic and Psychology. Two hours a week.
6. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 28-31 enough to make 15 hours per week with their required studies. One course of Latin, Greek, or Mathematics must be taken.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. One hour a week.
2. *Ethics*. Two hours a week.
3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 28-31 enough to make 15 hours per week with their required studies.

SCIENTIFIC COURSE.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.

2. *Mathematics*. Sharpless's *Geometry*; Hall and Knight's *Higher Algebra*; Oliver, Wait, and Jones's *Trigonometry*; *Mechanics*. Six hours a week the first half-year, seven the second.

3. *Latin*. Livy; The Odes and Epodes of Horace; Review of Latin Grammar; Translations at sight (Cicero, *De Senectute* and *De Amicitia*); Prose Composition. Four hours a week.

NOTE.—Students presenting for admission Modern Languages in place of Latin will take advanced work in German and French instead of the Latin mentioned above.

4. *Rhetoric and English Composition*. *Principles of Rhetoric* (A. S. Hill); Readings in English Prose; Composition (exercises in the class-room); Themes. Two hours a week the first half-year, one the second.

5. *Biology*. General Biology. Plant Dissection. One recitation and one afternoon in the Laboratory each week.

6. *Drawing*. Five hours a week.

SOPHOMORE CLASS.

1. *Scripture*. Luke's Gospel. One hour a week.

2. *Mathematics*. Smith's *Analytical Geometry*; Introductory *Calculus*; *Surveying*, with Field Practice. Three hours a week.

3. *German*. Joynes-Meissner's *Grammar*; Niebuhr's *Heroengeschichten*; Boisen's *Prose Extracts*; Translations at sight; Exercises in translating English into German. Three hours a week.

4. *French*. Edgren's *Grammar*; Super's *French Reader*; Knapp's *French Readings*; Composition; Translations at sight. Three hours a week.

NOTE.—Students presenting for admission Modern Languages in place of Latin will take advanced work in German and French instead of that outlined above.

5. *English Literature*. History of English Literature; Readings in English poetry; Themes. Two hours a week the first half-year.

6. *History*. Outlines of Ancient History; Mediæval History. (Text-Book and Lectures.) Two hours a week the second half-year.

7. *Physics*. Stewart's *Lessons*, with Experimental Lectures, three hours a week, and Laboratory Work, two and one-half hours a week, the first half-year.

8. *Chemistry*. Elementary General Chemistry, three hours a week, and Laboratory Work, two and one-half hours a week, the second half-year.

9. *Biology*. Invertebrate and Vertebrate Morphology; Lectures and Laboratory Work. One recitation and one half-day in the Laboratory each week.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Teachings of Christ. One hour a week.

2. *German*. Lessing's *Minna Von Barnhelm*; Eichendorff's *Aus dem Leben eines Taugenichts*; Goethe's *Iphigenie*; Exercises in German Composition (based on Whitney's *German Grammar*). Three hours a week.

3. *French*. Mlle. de la Seiglière; Crane's *Tableaux de la Révolution Française*; *Athalie*; Composition (Whitney's *Grammar*, Part II.); Lectures on the Language and Literature; Private Reading. (Examination will be held upon some of the books suggested.) Three hours a week.

NOTE.—Students who have had two years in French and German may take studies from the elective list in their place.

4. *Political Science*. Political Economy; Principles of Constitutional Law. (Text-Book and Lectures.) Two hours a week.

5. *Philosophy*. Logic and Psychology. Two hours a week.

ELECTIVE STUDIES.

(Two to be selected.)

1. *Mathematics*. Analytical Geometry of Three Dimensions; Calculus. Three hours a week.

2. *Chemistry*. General and Analytical Chemistry; Lectures and Laboratory Work. Three hours a week.

3. *Physics*. Heat or Electricity; Experimental Lectures. Three hours a week.

4. *Biology*. Histology and Embryology. Three hours a week.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scriptures*. Life and Teachings of Christ. One hour a week.

2. *Ethics*. Two hours a week.

3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 28-31 enough to make 15 hours per week with their required studies.

MECHANICAL ENGINEERING COURSE.

In the first two years of the Engineering Course the same work is required as in the Scientific Course, except that Shop Work and Mechanical Drawing take the place of History and Biology.

Students are advised to substitute French and German for the Latin of the Freshman year.

During the last two years students in Mechanical Engineering give their time to Mathematics, Shop Work, Drawing, study of the Materials of Engineering, the Theory of Constructions, and other special Engineering work.

Scripture and Themes are required through the four years, a course in Chemistry in the Junior year, and a course in Ethics in the Senior year.

COURSE PREPARATORY TO THE STUDY OF MEDICINE.

Any regular student anticipating the study of medicine may make this course a part of his four years, leading to the degree of A.B. or of S.B.

All students, regular or special, who have satisfactorily completed the course will receive a certificate to that effect.

FIRST YEAR.

First Half-Year.

General Biology	3½ hours.
Physiology	5 "
Invertebrate Biology	3½ "
Drawing	3 "
Mathematics	6 "
Latin* or German and French	5 "

Second Half-Year.

Botany	6 hours.
Vertebrates	5 "
Chemistry	6 "
Mathematics	7 "
Latin or German and French	5 "

* Students presenting one of these for admission must take the other as a part of the course.

SECOND YEAR.

<i>First Half-Year.</i>		<i>Second Half-Year.</i>	
Histology	5 hours.	Embryology	5 hours.
Mammalian Anatomy . .	5 "	Osteology	5 "
Chemistry	7½ "	Chemistry	7½ "
Physics	5½ "	Physics	7½ "
Geology	2 "	Logic	2 "
Psychology	2 "	English or History . . .	2 "
English	2 "		

ELECTIVE COURSES.

Seniors and Juniors will elect from the following list, with the approbation of the Faculty, sufficient to make up the required number of hours.

HEBREW.

Grammar. Old Testament. Reading. [Prof. 3.]*

GREEK.

- I. History of Greek Literature. Lectures; Selections for Reading. [Prof. Gifford. 3.]
 - II. Selections from the Greek Orators; Æschylus; Pindar; Lectures on Greek Art and Antiquities. [Prof. Gifford. 3.]
 - III. Sophocles; Euripides; Thucydides; Dictation exercises in writing. Greek. [Prof. Gifford. 3.]
 - IV. Patristic Greek, especially the Sub-Apostolic Literature. [Prof. 2.]
 - V. Advanced Criticism of the New Testament. [Prof. 2.]
- Courses I. and II. are given in alternate years.

LATIN.

- I. Horace, *Ars Poetica*; Juvenal, *Thirteen Satires*; Suetonius, *Divus Julius* and *Divus Augustus*; Tacitus, Selections from *Annals* and *History*; Plautus, *Captivi*; *Trinummus*; Cicero, Selections from Philosophical Works. [Prof. Sanford. 3.]

II. Readings from the following authors will occupy two hours each week during the College year. Pliny, *Letters*; Vergil, *Bucolics*; Terence, *Adelphi*; Lucretius, Catullus, Tibullus, Propertius, Ovid, Lucan.

One hour each week during the year will be occupied as follows: During the first half, Lectures and Examinations on the Topography of Italy, and particularly on the Topography, Buildings, Statuary, etc., of Ancient Rome; during the second half of the year an outline of the whole of Roman Literature.

[Prof. Sanford. 3.]

* These figures represent the number of hours per week. In Laboratory Work, etc., two and a half hours count as one.

ENGLISH.

I. ANGLO-SAXON.—Sweet, *Anglo-Saxon Reader*; Cynewulf's *Elene*; Lectures. [Prof. Gummere. 2.]

II. ENGLISH LITERATURE IN THE FOURTEENTH CENTURY.—Chaucer's *Canterbury Tales*. Lectures. [Prof. Gummere. 1.]

III. SHAKSPERE.—*Lear, Hamlet, Tempest, As You Like It*; Lectures on Elizabethan Poetry. [Prof. Gummere. 2.]

IV. ADVANCED ENGLISH COMPOSITION.—Exercises in Composition; Discussion of special work; Readings in English Prose. [Prof. Gummere. 1.]

Only those who have attained good rank in themes for the Freshman and Sophomore years will be admitted to this class. Members of it will be exempted from regular theme work.

V. ENGLISH LITERATURE OF THE EIGHTEENTH AND NINETEENTH CENTURIES.—Selections from Representative Authors; Lectures; Private Readings. [Prof. Gummere. 2.]

This course will be omitted in 1892-93.

GERMAN.

I. MIDDLE-HIGH-GERMAN.—Paul, *Mittelhochdeutsche Grammatik*. Selections from the Poems of Walther von der Vogelweide. *Das Niebelungenlied*. [Prof. Gummere. 2.]

II. GOETHE AND SCHILLER.—*Faust; Wallenstein*; Selected Poems; History of German Literature; Exercises in German Composition. [Prof. Gummere. 3.]

III. Lessing's *Minna von Barnhelm*; Selections from German Prose; Exercises in German Composition. [Prof. Gummere. 3.]

FRENCH.

I. Courses in Molière; Darmesteter and Hatzfeld's *Le Seizième Siècle en France*; Lectures; Themes in French; Private Reading. [Prof. Ladd. 2.]

II. Daudet's *Contes*; Blouët's *L'Elcquence de la Chaire Française*; Corneille's *Le Cid*; Racine's *Phèdre*; Crane's *Le Romantisme Français*; Hugo's *Hernani*; Exercises in Composition and Idioms; Lectures on the Language and Literature; Private Reading. [Prof. Ladd. 3.]

III. *Mlle. de la Seiglière*; Crane's *Tableaux de la Révolution Française*; *Athalie*; Composition; Lectures on the Language and Literature; Private Reading. [Prof. Ladd. 3.]

IV. Classical Juniors may continue the study of French the second half-year. The work will be similar to III. [Prof. Ladd. 2.]

MATHEMATICS.

I. Calculus; Analytical Geometry of Three Dimensions (Smith). [Prof. Morley. 3.]

II. Introduction to the Theory of Functions: Differential Equations (For-syth). [Prof. Morley. 3.]

- III. Modern Geometrical Methods. [Prof. Morley. 3.]
 IV. Dynamics of a Particle; Statics. [Prof. Brown. 3.]
 V. Attractions and Potential; Rigid Dynamics. [Prof. Brown. 3.]

HISTORY AND POLITICAL SCIENCE.

- I. Mediæval and Modern European History. [Prof. Thomas. 2.]
 II. Political and Constitutional History of England from the Anglo-Saxon Conquest to the Restoration. [Prof. Thomas. 3.]
 III. Political and Constitutional History of England from the Restoration to the present time. [Prof. Thomas. 3.]
 Courses II. and III. are intended to be given in alternate years.
 IV. American Colonial History to 1783; Europe and America during the Eighteenth Century. [Prof. Thomas. 3.]
 V. Constitutional and Political History of the United States, 1783 to 1865. [Prof. Thomas. 3.]
 Courses IV. and V. are intended to be given in alternate years.
 VI. Theory of the State. [Prof. Thomas. 3.]
 VII. History of Political Economy; Selected topics for investigation.
 Courses VI. and VII. will not be given in 1892-93. [Prof. Thomas. 3.]
 VIII. Ecclesiastical History. The Doctrines and Discipline of the Church as far as the first Council of Nicæa (A.D. 325). [Prof. 3.]

ASTRONOMY.

- I. Practical Astronomy, with Observatory Practice. [Prof. Leavenworth. 2.]
 II. Descriptive Astronomy. (Half-year.) [Prof. Leavenworth. 2.]

CHEMISTRY.

- I. General Chemistry; Lectures and Laboratory Work. [Prof. L. B. Hall. 3 or more.]
 II. Analytical Chemistry; Lectures and Laboratory Work. [Prof. L. B. Hall. 3 or more.]
 III. Organic Chemistry; Lectures and Laboratory Work. [Prof. L. B. Hall. 2.]

BIOLOGY.

- I. Invertebrates; Lectures and Laboratory Work. [Dr. W. S. Hall. 2.]
 II. Vertebrates; Lectures and Laboratory Work. [Dr. W. S. Hall. 2.]
 III. Histology; Lectures and Laboratory Work. [Dr. W. S. Hall. 3.]
 IV. Embryology; Lectures and Laboratory Work. [Dr. W. S. Hall. 3.]
 V. Mivart's *Cat*; Laboratory Work. [Dr. W. S. Hall. 2 or 3.]
 VI. Mammalian Osteology; Laboratory Work. [Dr. W. S. Hall. 2 or 3.]
 Courses I., III., and V. will be given the first half-year, and Courses II., IV., and VI. the second half-year.

GEOLOGY.

- Elementary Geology; Recitations and Field Work. (Half-year.) [Dr. W. S. Hall. 2.]

ENGINEERING.

- I. Materials of Construction ; Theory of the Steam Engine. [Prof. Edwards. 2.]
- II. Descriptive Geometry ; Elements of Mechanism. [Prof. Edwards. 2.]
Courses I. and II. will be given in alternate years.
- III. Machine Design and Draughting. (Open only to Engineering Students.) [Prof. Edwards. 2.]
- IV. Practical Mechanics. [Prof. Edwards. 2.]

PHYSICS.

- I. Mathematical Physics. [Prof. Thompson. 3.]
- II. Physical Optics ; Lectures and Laboratory Work. [Prof. Thompson. 2.]
- III. Theory of Heat and Electricity ; Laboratory Work. [Prof. Thompson. 2.]
- Courses II. and III. will be given in alternate years.

PHILOSOPHY.

- I. The History of Philosophical Thought ; lectures and text-book. [Prof. .]
- II. Advanced studies in Psychology. [Prof. .]
- III. Special studies : " Principles of Human Knowledge," Berkeley ;
" Critique of Pure Reason," Kant. [Prof. .]

LECTURES.

THE Lectures and Courses of Lectures to the whole college for the year 1890-91 were as follows :

Home Rule,	Theodore Fry, M.P.
The Literary Study of the Bible,	Richard G. Moulton.
The Alcestis,	Richard G. Moulton.
The Historic Schools of England,	President Sharpless.
The Wrong Side of the Moon,	Prof. J. R. Harris.

GRADING OF STUDENTS.

STUDENTS are divided, according to their grades, into five sections, A, B, C, D, E. Each student is notified of the section to which he has been assigned, but the grades are not published. Section E is composed of those who cannot be advanced to the next higher class, nor receive their Bachelor's degree. Daily recitations, hour examinations, and final examinations are all used as elements in determining the standing of a student.

ADVANCED DEGREES.

BACHELORS OF ARTS and BACHELORS OF SCIENCE of three years' standing may take the degrees of MASTER OF ARTS or MASTER OF SCIENCE, on submitting to the Executive Committee satisfactory evidence of continued good character, and passing an examination on some literary or scientific course of study which shall receive the approbation of the Faculty and Managers.

The following are stated as adequate courses of study to be presented by candidates for the second degree. Particulars can be had on application to the President.

I. Hebrew. Mitchell's Gesenius' Hebrew Grammar. Critical and philological reading and analysis of I. and II. Samuel; I. and II. Kings. Sight reading of Genesis, unpointed (edition of Muehlau et Kautzsch, Lipsiæ, 1885).

II. Assyrian. Lyon's Assyrian Manual. Friedrich Delitzsch's Assyrische Lesestücke. Syllabare (Sb. Sc.) S. 53-75. Neuassyrische Text, (S. 110, 4-121).

III. The whole of the New Testament in Greek, with the introduction to N. T. of Scrivener, and of Westcott and Hort.

IV. The whole of Thucydides, together with Grote and Curtius on the Peloponnesian War; Greek composition.

V. Twelve Tragedies of Æschylus, Sophocles, or Euripides; Greek composition.

NOTE.—A course similar to IV. and V. may be arranged in other Greek authors.

VI. Cicero's Tusculan Disputations (five books), De Natura Deorum and De Officiis, together with the History of Ancient Philosophy; Latin composition.

VII. Mommsen's and Merivale's Histories; the whole of Tacitus; Pliny's Letters; Latin composition.

VIII. German Literature, with translation at sight from any of the leading authors, and an essay in German.

IX. French Literature, with translation at sight from any of the leading authors, and an essay in French.

X. Greek Literature, with translation at sight from any of the leading authors, and an essay in Greek.

XI. Latin Literature, with translation at sight from any of the leading authors, and an essay in Latin.

XII. Pure Mathematics. Two of the following:

a. Introduction to the Theory of Functions. Elliptic Functions.

b. The Theory of Plane Curves.

c. Theory of Equations and Substitutions.

The course will require a knowledge of the Differential and Integral Calculus, such as is gained from the works of Williamson and Byerly.

XIII. Applied Mathematics.

- a.* Attractions and Potential. Rigid Dynamics.
- b.* Partial Differential Equations and Spherical Harmonics.
- c.* Hydrostatics and Hydrodynamics.
- d.* Lunar and Planetary Theories.

The course will require an elementary knowledge of the application of the Calculus to Dynamics.

XIV. Theoretical Astronomy (Computation of an Orbit—Oppolzer, Watson, or Gauss).

XV. Practical Astronomy (Chauvenet and Doolittle); Observatory Work.

XVI. Rankine's Applied Mechanics, or Rankine's Civil Engineering.

XVII. European History; Political, Constitutional, Economic.

XVIII. American History; Political, Constitutional, Economic.

Courses in History can be arranged by consultation with the Professor in charge of the department.

XIX. Ecclesiastical History. A general knowledge of the leading facts in Early Church History and an acquaintance with Greek and Latin will be required: a special subject may be selected from the following:

- a.* The writings of Barnabas and Justin and the Teaching of the Twelve Apostles.
- b.* The Clementine and Ignatian Epistles.
- c.* The Development of Christian Institutions (Stanley, Hatch, etc.).
- d.* The Ecclesiastical History of Eusebius.

XX. Germanic Philology and Literature. (One of the following to be selected):

a. *Anglo-Saxon*.—Grein's *Bibliothek der angelsächsischen Poesie*; Sweet's Edition (Early English Text Society) of the Anglo-Saxon Version of the *Cura Pastoralis*; Cook's Sievers' Anglo-Saxon Grammar. A knowledge of Gothic Grammar is required in this as in the next course.

b. *Middle High German*.—*Das Nibelungenlied*; Walther von der Vogelweide; *Gudrun*; History of Early German Literature; Old High German Grammar.

c. *Old Norse*. A course similar to *a* and *b* can be arranged in Old Norse Literature and Philology.

XXI. English Literature. An intimate acquaintance with the authors of some characteristic epoch will be required, and a good English style, manifested in an original essay.

XXII. Physics. Any two of the following, with Laboratory work. Mechanics (Sturm); Fluid Motion (Lamb); Thermodynamics (Clausius); Electricity and Magnetism (part of Mascart and Joubert); Acoustics (Donkin); Geometrical Optics (Heath); Physical Optics (Preston).

The Laboratory work required will, in general, be along the lines of the student's reading, and will consist either in the skillful repetition of some piece of research or in some independent work of scientific value.

XXIII. Comparative Morphology.

XXIV. General Pathology.

XXV. Comparative Embryology.

XXVI. Chemistry.

XXVII. Political Economy.

} Courses in these subjects can be arranged
by consultation with the Professor in charge
of the department.

Dissertations may be required in addition to examinations.

Candidates who are examined may also, if they desire, hand in Dissertations on topics in the field of study which they have specially investigated.

Resident Graduates, who have completed an adequate course of study, may be admitted to an examination for a second degree before the expiration of three years, if the Faculty deem it proper.

Graduates of other Colleges and Scientific Schools of good standing, who present satisfactory evidence of character and qualifications, will be admitted as candidates for the degree of Master of Arts. One years' residence at Haverford College will be required of all such students.

Bachelors of Arts and Science may be examined for the degrees of DOCTOR OF PHILOSOPHY and DOCTOR OF SCIENCE ; but such degrees will be conferred only after satisfactory proof of the faithful and successful prosecution of courses of study fully equal in extent and quality to those required for similar honors in the best Universities.

Notice of application for examination must be given to the President two months before Commencement. The examinations for non-residents will be held during the last week in the Fifth month, and in no case at a later date. The fee for the Diploma of the Second Degree is Twenty Dollars, of subsequent degrees Thirty Dollars, to be paid in all cases before the 10th of the Sixth month.

ALUMNI PRIZE FOR COMPOSITION AND ORATORY.

THE Association of the Alumni, in the year 1875, established an ANNUAL PRIZE, either of a Gold Medal or of an equivalent value in Books and a Bronze Medal, for excellence in Composition and Oratory.

The prize was awarded last year to DAVID H. BLAIR, of the class of 1891, for his oration on " The Negro Question."

The following are the Rules governing the competition :

I. The Alumni Medal is offered yearly to the competition of the members of the Senior and Junior Classes, as a prize for the best delivered oration prepared therefor. The oration to be handed in to the Professor of English not later than Twelfth month first.

II. Three or five Judges shall be appointed from year to year by the Alumni Committee, who shall, on the evening of the last evening but one before the winter vacation, hear publicly, in Alumni Hall, all competitors who may be qualified to appear.

III. No oration shall occupy in delivery more than fifteen minutes.

IV. In making their award, while due weight is given to the literary merits of the oration, the Judges are to consider the prizes as offered to encourage more especially the attainment of excellence in elocution.

V. The Judges shall have the right to withhold the prize if the elocution and the literary merits of the oration fall below a suitable standard of excellence.

PRIZES FOR SYSTEMATIC READING.

Two prizes, of \$60 and \$40 respectively, will be given to those members of the Junior Class who, having creditably pursued their regular studies and paid proper attention to physical culture, shall have carried on the most profitable courses of reading of standard authors during the Sophomore and Junior years.

The direction of the work and the decision as to the award of the prizes shall be in the hands of a committee consisting of the President, the Librarian, and the Professor of English.

Either or both prizes may be omitted if, in the judgment of the committee, the work done does not justify the award.

HONORS.

For the purposes of Honors studies are divided as follows :

I. Ancient Languages and Literature.

II. Modern Languages and Literature.

III. Mathematics, Physics, and Astronomy.

IV. Chemistry and Biology.

V. History, Philosophy, and Political Science.

Students candidates for Honors shall elect from one group at least five hours per week during the Junior year and eight hours per week during the Senior year, and shall make their announcements of candidacy at the beginning of the Junior year.

First and second Honors may be given, dependent on the judgment of the Professors immediately interested, to be decided by special examination or otherwise.

Honors shall be announced at Commencement and in the succeeding catalogue.

LIBRARY.

LIBRARIAN, Professor Allen C. Thomas; J. Wetherill Hutton, *Assistant*.

THE number of bound volumes in the Library of Haverford College is 25,880; exclusive of the Baur Library the number is 19,240. Numerous American and European periodicals, scientific and literary, are taken by the Library.

Through the liberality of friends of the College the theological and miscellaneous library of the late Gustav Baur, for many years Professor of Theology in the University of Leipsic, was bought and given to the College in 1889. It consists of 6,640 volumes, besides several thousand pamphlets. It is rich in theology, Oriental languages, and in German literature. It has been classified, and a card catalogue prepared.

From Walter Wood and Professor J. Rendel Harris were received in 1890 forty-seven manuscripts, collected by Professor Harris while in the East. They are chiefly Oriental, and have been fully catalogued and described in Haverford College Studies No. 4.

The Library is open as a reading-room from 9.30 A.M. to 6 P.M., during which time the volumes in the alcoves may be freely consulted. The Librarian devotes stated hours each week to the purpose of assisting and directing students in their reading, and in the intelligent use of books of reference and of authorities. He also arranges courses of reading.

CHEMICAL LABORATORY.

DIRECTOR, Dr. Lyman B. Hall.

THE Laboratory Work comprises elementary experiments in General Chemistry; an extended study of the more important elements and their compounds; qualitative and quantitative analysis; the preparation of pure compounds; and experimental work illustrating chemical laws and theories.

Students may substitute for the last two years of the Scientific Course a special course in Chemistry, embracing both theory and laboratory work.

Opportunity is given for elementary or advanced special work, with ample facilities for its prosecution.

PHYSICAL LABORATORY.

DIRECTOR, Dr. J. O. Thompson.

THE Physical Laboratory occupies five medium-sized rooms, and is well equipped for work in the different departments of Physics. The apparatus has been selected with especial reference to quantitative rather than qualitative work, and includes in every department exact standards. The department of electricity has been exceptionally well equipped, and additions are gradually being made to the apparatus in all departments.

The students are instructed in the accurate measurement of various physical quantities in mechanics, heat, light, and electricity. They are also assigned a certain amount of qualitative work leading up to a more intimate knowledge of the properties of matter.

The work of the more advanced students is supplemented by reading in the foreign and domestic scientific journals which are accessible in the Library.

BIOLOGICAL LABORATORY.

DIRECTOR, Dr. W. S. Hall.

THE Biological Laboratory has, among its appointments, sixteen compound microscopes, three microtomes, turn-tables warm-stages, dissecting microscopes, injecting appliances, photographic appliances, stage and eyepiece micrometers, incubators, water baths, glassware, reagents, aquaria, etc. Also a reference library of 200 recent works on Biology.

Students taking the Scientific Course work in the Laboratory two and a half hours a week during the Freshman and Sophomore years.

General Biology.—First half-year. General experiments, the Pteris fern, the earthworm; Sedgwick and Wilson's *Introduction to General Biology*.

Botany.—Second half-year. Gross and minute structure of types of each plant series; Arthur, Barnes and Coulter's *Plant Dissection*.

I. *Invertebrates*.—First half of second year. Gross and minute anatomy of representative types; *Brooks' Invertebrate Zoology*.

II. *Vertebrates*.—Last half of second year. Gross anatomy of fish, frog, turtle, pigeon, and rabbit.

III. *Histology*.—Elective half-year. Schaeffer's *Essentials of Histology* and Klein's *Histology*.

IV. *Embryology*.—Elective half-year. Embryology of the chick.

V. and VI. *Advanced Work* in the gross anatomy and in the comparative osteology of mammals.

MUSEUM.

CURATOR, Dr. W. S. Hall; ASSISTANT CURATORS, L. A. Bailey, Geo. L. Jones.

ORNITHOLOGY, Mineralogy, Geology, Conchology, Paleontology, and Invertebrate Zoölogy are well represented. To the last-named collection 160 species were added during the year. The Herbarium

contains about 1,500 species, many of which are foreign. Specimens in each department are classified and catalogued, and are used by lecturers and students in the class-rooms and laboratories..

MECHANICAL LABORATORY.

DIRECTOR, Professor Levi T. Edwards.

THE MECHANICAL LABORATORY occupies a commodious building erected in 1890 especially for the Engineering Department. It contains a machine shop, carpenter shop, blacksmith shop, foundry, draughting room, blue-printing room, and stock room. The machine shop contains, besides several complete sets of machinists' tools for vise work, several lathes, a planer, sharper, drill press, vises, etc. The carpenter shop contains several complete sets of carpenters' tools, two wood lathes, and a band saw. The foundry and blacksmith shop are well equipped.

The instruction begins with a series of graded exercises, which teach accuracy in the use of tools and illustrate the principles of machine construction. This is followed by practice in the construction of parts of machinery and the building of complete machines.

The students, under the care of the Director, are taken from time to time to visit machine shops and engineering constructions in Philadelphia and its vicinity.

ASTRONOMICAL OBSERVATORY.

DIRECTOR, Professor F. P. Leavenworth.

THE HAVERFORD OBSERVATORY affords the students the means of becoming familiar with the use of astronomical instruments, and of acquiring, from actual observation, a practical acquaintance with Astronomy.

It contains two Equatorial Telescopes, one by Clark, having an object-glass 10 inches in diameter, and one with an object-glass of

8¼ inches, with filar micrometer and eye-pieces ; a polarizing eye-piece ; a Newtonian Reflector, with a silver-on-glass speculum of 8¼ inches diameter ; a Prism Spectroscope ; a Meridian Transit Circle having a Telescope of 3¾ inches aperture, with a circle at each end of the axis 26 inches in diameter ; a Zenith Instrument of 1¾ inches aperture, with a micrometer ; two Sidereal Clocks, one with mercurial compensation, the other used to connect with a Bond's Magnetic Chronograph.

The latitude of the observatory is 40° 0' 40" N. ; its longitude, 6 minutes 59.4 seconds East from Washington.

A Special Course in Astronomy is offered to amateurs and teachers. The requisites for the course and the fees charged will depend on the work which the applicant desires to perform.

THE GYMNASIUM.

PHYSICAL EXAMINER, Dr. W. S. Hall ; DIRECTOR, G. H. Bickford.

THE GYMNASIUM is fitted with the apparatus of Dr. D. A. Sargent, of Harvard University. The Director gives systematic instruction based upon careful physical examination. Required work begins Twelfth month 1st and ends Fourth month 1st, and occupies three hours each week. It is arranged in three courses, each occupying one season. Students entering the Freshman Class are required to take the three courses, one each year, unless given advanced standing on previous systematic gymnasium drill. Students entering the Sophomore Class are required to complete two of the courses, with a privilege of taking advanced standing.

LITERARY SOCIETIES.

THE LOGANIAN SOCIETY was established by the Officers and Students in 1834.

The EVERETT-ATHENÆUM is a literary society of the students.

DEGREES GRANTED IN 1891.

At the Commencement in 1891 Degrees were granted in course to the following graduates :

MASTER OF ARTS.

CHARLES FREDERIC BRÉDÉ,	MYRON FRANCIS HILL,
LAWRENCE MARSHALL BYERS,	JESSE EVANS PHILIPS, JR.,
WILLIAM HUNT CARROLL,	LUCIAN MOORE ROBINSON,
HENRY LEE GILBERT,	LINDLEY MURRAY STEVENS,
EDWIN JAMES HALEY,	ROBERT RICHARDSON TATNALL,
DILWORTH P. HIBBERD,	WILLIAM FREDERICK WICKERSHAM.

MECHANICAL ENGINEER.

JOSEPH ESREY JOHNSON, JR.

BACHELOR OF ARTS.

HARRY ALGER,

DAVID HUNT BLAIR,

HENRY ARNOLD TODD.

BACHELOR OF SCIENCE.

WILLIAM WINDER HANDY,	DAVID LANE MEKEEL,
ARTHUR HOOPES,	JOHN STOKES MORRIS,
JOHN WETHERILL HUTTON,	GEORGE THOMAS, 3D,
ALLEN BALLINGER CLEMENT, Class of 1887.	

DOCTOR OF LAWS.

The degree of Doctor of Laws was bestowed *honoris causa* upon RICHARD M. JONES, of the class of 1867.

LIST OF GRADUATES AND HONORARY DEGREES.

(Degrees conferred by other institutions are indicated by *italics*.)

The only degree granted on graduation before 1877 was that of Bachelor of Arts.

GRADUATES.

<p style="text-align: center;">1836</p> <p>Thomas F. Cock, <i>M.D.</i>, LL.D. Joseph Walton</p> <p style="text-align: center;">1837</p> <p>*William C. Longstreth, *1881 *David C. Murray, *1885 Lindley Murray *Benjamin V. Marsh, *1882 *Joseph L. Pennock, *1870 Robert B. Parsons *Charles L. Sharpless, *1882 *Lloyd P. Smith, A.M., *1886 *B. Wyatt Wistar, *1869</p> <p style="text-align: center;">1838</p> <p>*James V. Emlen, <i>M.D.</i>, *1880 John Elliott</p> <p style="text-align: center;">1839</p> <p>Frederick Collins Thomas P. Cope Henry Hartshorne, <i>M.D.</i>, A.M., LL.D. Nereus Mendenhall, <i>M.D.</i> Richard Randolph, Jr., <i>M.D.</i> *Charles Taber, *1887</p> <p style="text-align: center;">1840</p> <p>*Joseph Howell, *1889 Anthony M. Kimber *Henry H. G. Sharpless, *1870 *John R. Winslow, <i>M.D.</i>, *1866</p> <p style="text-align: center;">1841</p> <p>*Richard H. Lawrence, *1847 *James P. Perot, *1872 *Elias A. White, *1866</p> <p style="text-align: center;">1842</p> <p>Robert Bowne Richard Cadbury *William S. Hilles, *1876 *Thomas Kimber, Jr., LTT.D., *1890 James J. Levick, <i>M.D.</i>, A.M. Edmund Rodman, A.M. Thomas R. Rodman, <i>A.B.</i> Benjamin R. Smith Augustus Taber Caleb Winslow, <i>M.D.</i></p>	<p style="text-align: center;">1843</p> <p>Robert B. Howland Francis White *William D. Stroud, <i>M.D.</i>, *1883</p> <p style="text-align: center;">1844</p> <p>Evan T. Ellis Robert B. Haines Isaac Hartshorne</p> <p style="text-align: center;">1845</p> <p>Edmund A. Crenshaw *Robert Pearsall, *1849</p> <p style="text-align: center;">1849</p> <p>Albert K. Smiley, A.M. Alfred H. Smiley, A.M.</p> <p style="text-align: center;">1851</p> <p>Joseph L. Bailey Philip C. Garrett Thomas J. Levick Franklin E. Paige, A.M. Zaccheus Test, <i>M.D.</i>, A.M. James C. Thomas, <i>M.D.</i>, A.M. Richard Wood</p> <p style="text-align: center;">1852</p> <p>Dougan Clark, <i>M.D.</i> Lewis N. Hopkins William L. Kinsman. William E. Newhall James Whittall</p> <p style="text-align: center;">1853</p> <p>William B. Morgan, A.M. William H. Pancoast, <i>M.D.</i>, A.M.</p> <p style="text-align: center;">1854</p> <p>Frederick Arthur, Jr. John W. Cadbury John B. Garrett David Scull, Jr.</p> <p style="text-align: center;">1855</p> <p>*Samuel Bettle, *1859. John R. Hubbard, A.M.</p>
---	---

1856

Bartholomew W. Beesley
 Joel Cadbury, Jr.
 Jonathan J. Comfort, *M.D.*
 *James M. Walton, *1874
 Edward R. Wood, A.M.

1857

Jesse S. Cheyney, A.M.
 *Cyrus Mendenhall, *1858
 Stephen Wood

1858

Thomas H. Burgess
 Thomas Clark
 Daniel W. Hunt
 *Samuel T. Satterthwaite, *1865
 William G. Tyler
 Thomas Wistar, A.M., *M.D.*
 Ellis H. Yarnall, *LL.B.*

1859

*Richard W. Chase, *1865
 James R. Magee
 *Richard C. Paxson, *1864
 *Edward Rhoads, *M.D.*, *1871
 Edward C. Sampson
 *George Sampson, *1872
 Abram Sharples, *M.D.*
 Benjamin H. Smith

1860

*Lindley M. Clark, *1861
 *William B. Corbit, *M.D.*, *1882
 *William M. Corlies, *1881
 Cyrus Lindley
 Theodore H. Morris
 Frederick W. Morris
 Richard Pancoast
 John W. Pinkham, *M.D.*
 Francis Richardson
 Clement L. Smith, A.M., *LL.D.*
 James Tyson, *M.D.*, A.M.
 Silas A. Underhill, *LL.B.*

1861

Edward Bettie, Jr.
 *Henry Bettie, *1886
 *Charles Bettie, *1883
 William B. Broomall
 Charles H. Jones
 *Thomas W. Lamb, A.M., *M.D.*, *1873
 William N. Potts
 Jehu H. Stuart, A.M., *M.D.*
 John C. Thomas.

1862

Henry T. Coates, A.M.
 *Samuel A. Hadley, *1864
 Horace G. Lippincott

George B. Mellor
 Horace Williams, *M.D.*
 Isaac F. Wood

1863

Thomas J. Battey, A.M.
 George M. Coates, Jr., A.M.
 William M. Coates
 *Richard T. Jones, *1869
 William H. Morris
 Joseph G. Pinkham, *M.D.*, A.M.

1864

*Franklin Angell, A.M., *1882
 *William Ashbridge, *M.D.*, *1884
 Edward H. Coates
 Howard M. Cooper, A.M.
 Albin Garrett
 Morris Longstreth, A.B., *M.D.*, A.M.
 Albert Pancoast
 Charles Roberts
 E. Pope Sampson
 *Edward L. Scull, *1884
 *Randolph Wood, *1876

1865

John R. Bringhurst
 Edward T. Brown
 James A. Chase
 Joseph M. Downing
 Arthur Haviland
 *David H. Nichols, *1865
 Henry W. Sharpless
 *George Smith, Jr., *1872
 Robert B. Taber, A.M.
 Allen C. Thomas, A.M.
 Benjamin A. Vail
 Caleb Cresson Wistar

1866

A Marshall Elliott, A.M.
 Benjamin E. Valentine, *LL.B.*

1867

*John Ashbridge, *1881
 George Ashbridge, A.M., *LL.B.*
 William P. Clark, A.M., *LL.B.*
 Samuel C. Collins, A.M.
 Nathaniel B. Crenshaw
 Charles H. Darlington, A.M.
 *William T. Dorsey, *M.D.*, *1870
 B. Franklin Eshleman
 Richard M. Jones, A.M., *LL.D.*
 *Charles W. Sharpless, *1889
 Walter Wood

1868

Edward H. Cook
 *Alexis T. Cope, *1883
 Benjamin C. Satterthwaite

Louis Starr, *M.D.*
S. Finley Tomlinson
Joseph H. Wills, A.M., *M.D.*

1869

Johns H. Congdon
Henry Cope, A.M.
Ludovic Estes, *A.M.*
*Henry Evaul, A.M., *1877
*William B. Kaighn, *1876
Pendleton King, A.M.
William H. Randolph
Edward B. Taylor, *M.C.E.*
William S. Taylor
James G. Whitlock
Walter Wood
Henry Wood, *Ph.D.*

1870

J. Stuart Brown
John E. Carey
Alford G. Coale
Howard Comfort
T. Allen Hilles
William H. Hubbard, *M.D.*
*Thomas K. Longstreth, A.M., *1883
Oliver G. Owen, A.M.
Charles E. Pratt, A.M.
David F. Rose
*John D. Steele, *1886
Charles Wood, A.M.
Stuart Wood, *Ph.D.*

1871

Henry G. Brown
William P. Evans
John S. Garrigues
Reuben Haines, A.M.
William H. Haines
Joseph Hartshorne
Jesse F. Hoskins
Walter T. Moore
Ellis B. Reeves
Alfred R. Roberts, *C.E.*
Charles S. Taylor
Edward D. Thurston
Randolph Winslow, *M.D.*, A.M.

1872

Richard Ashbridge, *M.D.*
Richard T. Cadbury, A.M., *A.B.*, A.M.
James Carey, Jr., *LL.B.*
Thomas S. Downing, Jr.
Walter Erben
Thomas Roland Estes
John E. Forsythe
William H. Gibbons, A.M.
Francis B. Gummere, *A.B.*, A.M., *Ph.D.*
Casper Wistar Haines, A.M., *C.E.*
Abram Francis Huston
*Marmaduke Cope Kimber, A.M., *1878
William M. Longstreth
Richard H. Thomas, *M.D.*

1873

James C. Comfort
Thomas P. Cope, Jr.
George W. Emlen
Joseph M. Fox
Henry C. Haines
Benjamin H. Lowry, A.M.
Alden Sampson, A.M.
*Julius L. Tomlinson, A.M., *1890

1874

Edward P. Allinson, A.M.
John G. Bullock
James Emlen
Charles R. Hartshorne, *LL.B.*
Samuel E. Hilles
John B. Jones
*Mahlon Kirkbride, *1889
Theophilus P. Price
James B. Thompson
Joseph Trotter

1875

Edward K. Bispham
Alonzo Brown, A.M.
J. Franklin Davis, A.M.
Charles E. Haines
William Hunt, Jr.
Charles L. Huston
Harold P. Newlin
Walter W. Pharo
Charles E. Tebbetts
Miles White, Jr.

1876

Francis G. Allinson, A.M., *Ph.D.*
David S. Bispham
Reuben Colton
Henry W. Dudley
Seth K. Gifford, A.M.
L. Lyndon Hobbs, A.M.
Richard H. Holme
*Thomas William Kimber, *1885
Charles A. Longstreth
J. Whitall Nicholson
Percival Roberts, Jr.
Frank H. Taylor
Howard G. Taylor
*Lewis A. Taylor, *1881

1877

A. B.

Isaac W. Anderson
Frederic L. Baily
Isaac Forsythe
James D. Krider
George G. Mercer, *LL.M.*, *J.C.D.*
Wilson Townsend

S. B.

William F. Smith

1878

A.B.

Henry Baily, A.M.
 Albert L. Baily
 Francis K. Carey, *LL.B.*, A.M.
 Edward T. Comfort
 Charles S. Crosman, *LL.B.*
 Samuel H. Hill
 Lindley M. H. Reynolds
 Daniel Smiley, Jr.
 Henry L. Taylor, A.M., *M.D.*
 John M. W. Thomas
 George W. White

S.B.

Jonathan Eldridge
 Edward Forsythe
 Cyrus P. Frazier, *A.B.*
 Robert B. Haines, Jr.
 Henry N. Stokes, *Ph.D.*

1879

A.B.

Samuel Bispham, Jr.
 Edward Gibbons
 John H. Gifford, *M.D.*
 Francis Henderson, *LL.B.*
 William C. Lowry
 John B. Newkirk
 John F. Sheppard, Jr., *M.D.*

1880

A.B.

Charles F. Brédé, A.M.
 Charles E. Cox
 Josiah P. Edwards
 James L. Lynch
 Samuel Mason, Jr.
 William F. Perry
 Joseph Rhoads, Jr., A.M.

S.B.

William Bishop
 Alexander P. Corbit
 Charles E. Gause, Jr.
 Edward M. Jones

1881.

A.B.

William A. Blair
 A. Morris Carey
 Levi T. Edwards A.M.
 Edward Y. Hartshorne
 Isaac T. Johnson, A.M.
 Edwin O. Kennard
 Jesse H. Moore
 William E. Page
 Walter F. Price, A.M., *A.M.*
 Thomas N. Winslow
 John C. Winston

S.B.

Walter Brinton
 William H. Collins
 Joseph H. Cook
 Davis H. Forsythe
 Albanus L. Smith

1882

A.B.

George A. Barton, A.M., *A.M.*
 Isaac M. Cox
 Richard B. Hazard
 Wilmot R. Jones
 *Wilmer P. Leeds, *1885
 J. Henley Morgan
 Edward Randolph

S.B.

John E. Coffin
 Daniel Corbit
 George L. Crosman
 Frederic D. Jones
 T. Chalkley Palmer
 Lindley M. Winston

1883

A.B.

John Blanchard, *LL.B.*
 Frank F. Briggs
 George H. Evans
 Francis B. Stuart
 Bond V. Thomas
 Thos. K. Worthington, *LL.B.*, *Ph.D.*

S.B.

William L. Baily
 Stephen W. Collins
 D. William Edwards
 William E. Scull
 Samuel B. Shoemaker, *M.D.*
 John D. Spruance
 W. Alpheus White
 Charles H. Whitney
 Louis B. Whitney

1884

A.B.

John Henry Allen, A.M.
 Orren William Bates
 Thomas Herbert Chase
 William J. Haines
 Arthur D. Hall
 Charles R. Jacob
 Alfred Percival Smith, *LL.B.*

S.B.

Louis T. Hil'
 Walter L. Moore
 George Vaux, Jr., *LL.B.*

L.B.

Francis A. White

1885

A.B.

Samuel Bettie
 Enos L. Doan
 William T. Ferris
 William S. Hilles
 William T. Hussey
 Arthur W. Jones, A.M.
 Joseph L. Markley, A.M., A.M., Ph.D.
 Marriott C. Morris
 Augustus T. Murray, Ph.D.
 Augustus H. Reeve
 William F. Reeve
 Isaac Sutton, A.M.
 Elias H. White, LL.B.
 William F. Wickersham, A.M.

S.B.

Charles W. Baily
 John J. Blair
 Thomas Newlin
 Theodore W. Richards, A.M., Ph.D.
 *Matthew T. Wilson, *1891

1886

A.B.

Jonathan Dickinson, Jr.
 Alexander H. Scott
 Horace E. Smith
 Edward D. Wadsworth, LL.B.

S.B.

Thomas W. Betts
 Guy R. Johnson
 William S. McFarland
 Israel Morris, Jr., *1891.
 William P. Morris
 Alfred M. Underhill, Jr.
 Wilfred W. White

1887

A.B.

Joy Howe Adams, M.D.
 Edward B. Cassatt
 William H. Futrell
 Alfred C. Garrett, A.B., A.M.
 Henry H. Goddard, A.M.
 Willis H. Hazard
 Barker Newhall, A.M.
 Jesse E. Philips, Jr., A.M.
 Henry W. Stokes
 Frederick H. Strawbridge
 Richard J. White
 George B. Wood
 William C. Wood

S.B.

*Arthur H. Baily, *1883
 Charles H. Bedell
 Allen B. Clement

Horace Y. Evans, Jr.

Hugh Lesley

*William W. Trimble, *1891

B.E.

P. Hollingsworth Morris

1888

A.B.

E. Morris Cox
 Howell S. England, A.M.
 Allison W. Slocum, A.M.
 Martin B. Stubbs, A.M.

S.B.

Charles H. Battey
 John C. Corbit, Jr.
 Morris E. Leeds
 William Draper Lewis, LL.B.
 Henry V. Gummere, A.M., A.M.
 Francis C. Hartshorne, LL.B.
 Joseph T. Hilles
 George B. Roberts
 Joseph W. Sharp

B.E.

Lawrence P. Beidelman
 Joseph E. Johnson, Jr., M.E.
 Frederick W. Morris, Jr.
 Richard J. Morris

1889

A.B.

Robert C. Banes
 Thomas F. Branson
 Charles H. Burr, Jr., A.M.
 Thomas Evans
 Warner H. Fite
 Warren C. Goodwin
 Victor M. Houghton
 Franklin B. Kirkbride
 Daniel C. Lewis
 Lawrence J. Morris
 William F. Overman
 Frank W. Peirson, A.M.
 Samuel Prioleau Ravenel, Jr.
 Walter George Reade
 Lindley M. Stevens, A.M.
 John Stogdell Stokes
 *Layton W. Todhunter, *1889.
 Frederick N. Vail, A.M.
 Gilbert C. Wood

S.B.

William R. Dunton, A.M.
 Arthur N. Leeds, A.M.
 J. Henry Painter
 David J. Reinhardt
 Frank E. Thompson, A.M.

B.E.

Herbert Morris

1890.

A.B.

James Stuart Auchincloss
 William G. Audenried, Jr.
 Henry R. Bringham, Jr.
 Charles T. Cottrell
 Guy H. Davies
 Robert E. Fox
 Henry L. Gilbert, A.M.
 William G. Jenkins
 Thomas S. Kirkbride
 Jonathan M. Steere

S.B.

Thomas Amory Coffin
 Edward M. Angell
 Percy S. Darlington
 William M. Guilford, Jr.
 John N. Guss
 Edwin J. Haley, A.M.
 Robert R. Tatnall, A.M.
 Dilworth P. Hibberd, A.M.
 Alfred C. Tevis

B.E.

John F. Taylor Lewis
 Edward R. Longstreth
 William Percy Simpson
 Ernest Forster Walton

1891

A.B.

Harry Alger
 David H. Blair
 Henry A. Todd.

S.B.

William W. Handy
 Arthur Hoopes
 John Wetherill Hutton
 David L. Mekeel
 John Stokes Morris
 George Thomas, 3d

Whole number of graduates, 477.

The following graduate students have received Advanced Degrees
 not having been undergraduates at Haverford.

1890.

William B. Eaton, A.B., Wesleyan, 1889, A.M.
 Charles L. Michener, A.B., Penn, 1884, A.M.
 Charles E. Pritchard, A.B., Earlham, 1889, A.M.
 William E. Sayrs, A.B., Wilmington, 1889, A.M.
 Charles E. Terrell, S.B., Earlham, 1888, A.M.
 Charles H. Thurber, Ph.B., Cornell, 1886, A.M.
 Robert W. Rogers, A.B., Johns Hopkins, 1887, Ph.D.

1891.

Lawrence M. Byers, A.B., Penn, 1890, A.M.
 William H. Carroll, A.B., Wilmington, 1870, A.M.
 Myron F. Hill, A.B., Harvard, 1890, A.M.
 Lucian M. Robinson, A.B., Harvard, 1882, A.M.

HONORARY DEGREES.

1858	1882.
Hugh D. Vail, A.M.	Henry T. Coates, A.M.
1859	1883
*Joseph W. Aldrich, A.M., *1865	Thomas F. Cock, LL.D.
1860	James Wood, A.M.
John G. Whittier, A.M.	Henry N. Hoxie, A.M.
1864	1884
Edward D. Cope, A.M.	Joseph Parrish, A.M.
1867	Elijah Cook, A.M.
Joseph Moore, A.M.	1885
1872	Julius L. Tomlinson, A.M.
William Jacobs, A.M.	Robert Howland Chase, A.M.
1875	1886
*Samuel Alsop, Jr., A.M., *1888	Edward H. Magill, LL.D.
1876	1887.
*Pliny E. Chase, LL.D., *1886	Thomas Kimber, LL.D.
William H. Pancoast, A.M.	1888.
1877	Clement L. Smith, LL.D.
John J. Thomas, A.M.	1890
1879	Joseph John Mills, LL.D.
Richard M. Jones, A.M.	1891.
Ellis Yarnall, A.M.	Richard M. Jones, LL.D.
1880	
Thomas Chase, LL.D.	
Thomas Hughes, LL.D.	

THE FACULTY

desires to place a copy of the Annual Catalogue in the hands of every alumnus and member of the corporation. It is requested that all omissions that become known be reported to the Secretary of the College.

Haverford College Studies.

- No. 1—The Library of the Convent of the Holy Sepulchre at Jerusalem ;
J. Rendel Harris.
Work of Haverford College Observatory ; F. P. Leavenworth.
On the Geometry of a Nodal Circular Cubic ; Frank Morley.
On the Period of Rotation of the Sun ; Henry Crew.
On the Symbolic Use of the Colors Black and White in Germanic Tradition ; Francis B. Gummere.
- No. 2—The Rest of the Words of Baruch ; J. Rendel Harris.
Some Esarhaddon Inscriptions ; Robert W. Rogers.
- No. 3—The Passion of Perpetua ; J. Rendel Harris and Seth K. Gifford.
On Some Properties of the Triangle ; Frank Morley.
- No. 4—On the Numerical Characteristics of a Cubic Curve ; Charlotte Angas Scott.
On the Caustic of the Epicycloid ; Frank Morley.
Sun-Spot Observations ; H. V. Gummere and F. P. Leavenworth.
On a New Manuscript of the Four Gospels ; W. C. Braithwaite.
A Catalogue of Manuscripts (chiefly Oriental) in the Library of Haverford College ; Robert W. Rogers.
The Passion of Perpetua ; translated by Seth K. Gifford.
Specimens of Uncial Lectionaries from Mount Sinai ; J. Rendel Harris.
- No. 5—The Diatessaron of Tatian, a Preliminary Study ; J. Rendel Harris.
- Nos. 6 and 7—The Apology of Aristides ; J. Rendel Harris.
- No. 8—The Codex Bezae ; J. Rendel Harris.
- No. 9—The Codex Sangallensis ; J. Rendel Harris.
Unpublished Inscriptions of Esarhaddon ; Robert W. Rogers.
- No. 10—Some Interesting Inscriptions ; J. Rendel Harris.
Stellar Parallax ; F. P. Leavenworth.
Cuniform-Representation by Means of the P-Function ; Frank Morley.

Price, One Dollar per Number.

Other numbers will appear as material accumulates.

For copies address

The Secretary of Haverford College,

Haverford College P. O., Pa.

CATALOGUE
OF
HAVERFORD COLLEGE.



1891-92

Second Edition.

CATALOGUE

OF

HAVERFORD COLLEGE.

(HAVERFORD COLLEGE P. O., PA.)

1891-92.



Philadelphia:

PRESS OF FERRIS BROTHERS

SEVENTH AND FILBERT STREETS

CALENDAR.

College Year 1891-92 began	9th Mo. 23
Alumni Prize Orations	12th Mo. 22
Winter Recess begins	12th Mo. 23
Winter Term begins, 1892*	1st Mo. 5
Mid-year Examinations begin	1st Mo. 23
Second Half-year begins	2d Mo. 1
Junior Exercises	4th Mo. 14
Spring Recess begins	4th Mo. 15
Spring Term begins*	4th Mo. 26
Alumni Meeting	6th Mo. 20
Examinations for Admission, 9.30 A. M. . . .	6th Mo. 20
Commencement Day, 1892	6th Mo. 21

VACATION OF THIRTEEN WEEKS.

Examinations for Admission, 9.30 A. M. . . .	9th Mo. 20
College Year 1892-93 begins*	9th Mo. 21
Alumni Prize Orations	12th Mo. 22
Winter Recess begins	12th Mo. 23
Winter Term begins 1893*	1st Mo. 4
Second Half-year begins 1893	2d Mo. 1
Junior Exercises	4th Mo. 13
Spring Recess begins	4th Mo. 14
Spring Term begins	4th Mo. 25
Alumni Meeting	6th Mo. 19
Examinations for Admission, 9.30 A. M. . . .	6th Mo. 19
Commencement Day, 1893	6th Mo. 20

* The first recitations are due promptly at *half-past nine o'clock* at the beginning of each term. No absences from them are excused, unless clearly unavoidable.

CONTENTS.

Calendar,	2
History and Description,	4
Corporation,	8
Faculty,	9
Graduate Students,	11
Undergraduate Students,	13
Seniors,	13
Juniors,	14
Sophomores,	15
Freshmen,	16
Summary of Students,	17
Admission,	18
Expenses,	20
Scholarships,	21
Fellowships,	21
Courses of Instruction for Undergraduates,	22
Course in Arts and Science,	23
Scientific Course,	25
Mechanical Engineering Course,	27
Course Preparatory to the Study of Medicine,	27
Elective Courses,	28
Lectures,	31
Grading of Students,	31
Advanced Degrees and Graduate Instruction,	32
Alumni Prize,	34
Prizes for Systematic Reading,	35
Honors,	35
Library,	36
Chemical Laboratory,	37
Physical Laboratory,	37
Biological Laboratory,	38
Museum,	38
Mechanical Laboratory,	39
Astronomical Observatory,	39
Gymnasium,	40
Literary Societies,	40
Degrees granted in 1891,	41
List of Graduates and Honorary Degrees,	42

HISTORY AND DESCRIPTION.

IN the spring of 1830, a meeting of a few Friends in Philadelphia, shortly followed by a similar meeting in New York, originated Haverford School. The joint committee expressed the object of the effort as follows: "The members of the Society of Friends, having hitherto labored under great disadvantages in obtaining for their children a guarded education in the higher branches of learning, combining the requisite literary instruction with a religious care over the morals and manners of the scholars, . . . and carefully preserving them from the influence of corrupt principles and evil communications, it is therefore proposed that an institution be established in which the children of Friends shall receive a liberal education in ancient and modern literature, and the mathematical and other sciences."

The \$40,000 supposed to be necessary was raised without great effort, and the committee went out to seek a location. They say: "We wished to procure a farm in a neighborhood of unquestioned salubrity—within a short distance of a Friends' meeting—of easy access from this city at all seasons of the year, . . . and that was recommended by the beauty of the scenery and retired situation." Then they go on to say, that of the many places presented to them the only one which combined all the advantages was one of 198½ acres (since increased to 215), "near the eight-mile stone on the Lancaster Turnpike." They explain the present and prospective merits of the farm, the beauty of the natural woods, the unfailing springs of purest water, the nearness to the new Pennsylvania Railroad, in words which the succeeding half-century has amply justified.

On the 28th of Tenth Month, 1833, the school opened with 21 students. Provision had been made for three teachers and a superintendent.

"A Teacher of Ancient Languages and Ancient Literature.

"A Teacher of English Literature, and of Mental and Moral Philosophy.

"A Teacher of Mathematics and Natural Science."

The Superintendent was to have charge of the order and domestic economy of the family.

The regulations of the new school were rigid. The bounds and time of the boys were very strictly marked out. All the details of the daily programme were arranged with great care; and if the elaborate provision of a number of wise men for the normal growth of students could convert boys into perfect men, the students of Haverford of fifty years ago had every advantage.

The High School thus established grew rapidly into prosperity and debt. The charges were low, the teachers were liberally paid, and the years which followed were marked by a constant endeavor to produce a maximum of good fruits from very limited funds. The deficiencies were made up in a liberal spirit, and a constant growth maintained by frequent subscriptions. All the time the school was justifying the effort by the quality of its results, and making for itself an increasing number of friends.

One of the first acts of the committee, after the absolute necessities of the school were provided for, was to construct a gymnasium, and make arrangements for systematical physical work. They were determined that the advantage gained by the salubrity of the surroundings should not be lost for want of exercise. Under their care the lawn was graded at great expense, and foreign and native trees set out, with the design to make it a great arboretum. Cricket was introduced, a game not known elsewhere in America, and has always flourished since. A greenhouse and flower garden were established and maintained for twenty years by the work of the boys. The ideas that have done harm elsewhere, that schools were places for mental development only, had no foothold here, but morals, muscle, and senses received their due share of culture.

In 1845 a temporary suspension was decreed, to allow the funds to accumulate and give time for the collection of an endowment, which suspension lasted for three years. In 1852 the observatory was built, and supplied with an 8-inch equatorial and 4-inch transit. In 1856 the school was changed to a college, and authorized by the Legislature to grant degrees, but previous to this time the course had been as extended as in many colleges. It was still hampered with a large preparatory department, which was not abolished till 1861. In 1863 the Alumni Hall and Library were built. In 1876-7 Barclay Hall, containing private dormitories and study-rooms, was erected, at a cost of

\$82,000, which was collected by subscription. The Chemical Laboratories were perfected in 1878. The new Observatory was built in 1883, the Mechanical Laboratory established in 1884, and a new building erected in 1890, the Biological Laboratory was established in 1886, and the Physical Laboratory in 1888. Chase Hall, for lecture and recitation-rooms, was built in 1888.

During this time Haverford had developed into a fully organized college. Many rules, adapted to boys of a boarding-school age, had been modified or abandoned, though enough of restraint was retained to provide against demoralization. The standard of admission was raised. Students of any denomination were admitted, though Friends still retained the general control. The number of teachers was increased five-fold. By various donations and bequests the endowment fund was enlarged. The annual charge was increased from \$200 to \$500,* which still fails to represent what the college has to pay for professors' salaries and board and care of students. Retaining the old idea of a "guarded education" and "a religious care over morals and manners," the college has sought to effect these results, and has measurably succeeded, rather by appeals to Christian principle and manliness than by arbitrary power.

In Barclay Hall, the hall of residence, two students occupy a study-room, and each has his private, adjoining bed-room. A few single rooms are also provided. Recitation-rooms, laboratories, and dining-room are in Founders' Hall. The Library and Observatory are in separate buildings near by. Some of the professors live in the halls with the students, and others have cottages on the grounds.

The college has a remarkably pleasant and healthful location in the township of Haverford, Delaware County,† Pa., nine miles west of Philadelphia, on the Pennsylvania Railroad. The buildings are surrounded by grounds of about sixty acres, tastefully laid out, and adorned with well-kept lawns, and a great variety of trees and shrubbery. These grounds comprise excellent fields for cricket, base-ball, foot-ball, tennis and other field games, a running and bicycle track, and a pond for skating.

The courses of study are designed to give a liberal education. Their scope will be seen on the following pages. Religious instruction

* The price may vary, depending on the situation of the room, from \$375 to \$525. Most of the rooms involve a payment of \$500.

† Haverford College *Post-Office* is in Montgomery County.

is carefully provided. In addition to the daily reading of the Holy Scriptures, recitations in the English or Greek New Testament or in Scripture History are required of the student once a week. By exposition and collateral information the instructors endeavor to enforce the true meaning of the lessons. Haverford College desires to inculcate the simple truths of the Christian religion.

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John Farnum Professor of Chemistry.

SETH K. GIFFORD, A.M.,
Professor of Greek.

JAMES RENDEL HARRIS, A.M.,
*Non-Resident Professor of Bible Languages
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and Professor of Latin.

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Professor of Mechanical Engineering.

WILLIAM COFFIN LADD, A.M.,
Professor of French.

FRANCIS B. GUMMERE, PH.D.,
Professor of English and German.

*Arranged primarily as Professors, Instructors, etc. ; secondarily in the order of appointment.

HAVERFORD COLLEGE.

FRANK MORLEY, A.M.,

Professor of Pure Mathematics..

FRANCIS P. LEAVENWORTH, A.M.,

Director of the Observatory.

WINFIELD SCOTT HALL, M.S., M.D.,

*Instructor in Biology (David Scull Foundation).**Instructor in Physical Training.*

ERNEST WILLIAM BROWN, A.M.,

Instructor in Applied Mathematics.

JOSEPH OSGOOD THOMPSON, PH.D.,

Instructor in Physics.

GEORGE H. BICKFORD, A.B.,

Instructor in English and in Physical Training.

JOHN H. BECHTEL,

Instructor in Elocution.

GEORGE A. BARTON, PH.D.,

Instructor in Bible Languages.

ROBERT S. DEBOW, PH.D.,

Instructor in Philosophy.

JONATHAN MOWRY STEERE, A.B.

Secretary of the College.

WILLIAM HENRY COLLINS, S.B.,

Assistant in the Observatory.

J. WETHERILL HUTTON, S.B.,

Assistant in the Library.

GRADUATE STUDENTS.

GIFFORD, ELMER H., S.B. (Penn, 1888),
Oskaloosa, Ia.
Penn Fellow.
Major Subject—Physics.

HUBBARD, BYRON CHARLES, S.B. (Earlham, 1891),
Monrovia, Ind.
Earlham Fellow.
Major Subject—Engineering.

HUTTON, JOHN WETHERILL, S.B. (Haverford, 1891),
Westtown, Pa.
Major Subject—Political Science.

MEKEEL, DAVID LANE, S.B. (Haverford, 1891),
Yorktown Heights, N. Y.
Haverford Fellow.
Major Subject—Mechanical Engineering.

MORRIS, JOHN STOKES, S.B. (Haverford, 1891),
Germantown, Pa.
Major Subject—Mathematics.

OVERMAN, WILLIAM FRANKLIN, A.B. (Haverford, 1889),
Jenkintown, Pa.
Major Subject—Physics.

ROBINSON, LUCIAN MOORE, A.B. (Harvard, 1882),
Philadelphia, Pa.
Major Subject—Germanic Philology.

*STATLER, FRANK B., A.B. (Wilmington, 1891),
Wilmington, O.
Wilmington Fellow.
Major Subject—Greek.

STEERE, JONATHAN MOWRY, A.B. (Haverford, 1890),
Harrisville, R. I.
Major Subject—Germanic Philology.

* Deceased Eleventh month 24th, 1891.

UNDERGRADUATE STUDENTS.

SENIOR CLASS.

Blair, Augustine Wilberforce,	<i>Archdale, N. C.,</i>	Scientific.
Brumbaugh, I. Harvey,	<i>Huntingdon, Pa.,</i>	Arts and Science.
Cadbury, Benjamin,	<i>Philadelphia Pa.,</i>	Arts and Science.
Cary, Egbert Snell,	<i>Baltimore, Md.,</i>	Scientific.
Collins, Minturn Post,	<i>Purchase, N. Y.,</i>	Scientific.
Cook, Charles Gilpin,	<i>Glenville, Md.,</i>	Scientific.
Dennis, Joseph Henry,	<i>Dover, N. H.,</i>	Arts and Science.
Detwiler, Warren H.,	<i>Ironbridge, Pa.,</i>	Arts and Science.
Hall, Rufus Hacker,	<i>Boston, Mass.,</i>	Arts and Science.
Hart, Walter Morris,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Jenks, William Pearson,	<i>Philadelphia, Pa.,</i>	Scientific.
McAllister, Franklin,	<i>Philadelphia, Pa.,</i>	Scientific.
Muir, John Wallingford,	<i>Philadelphia, Pa.,</i>	Scientific.
Stone, Ralph Warren,	<i>Warren, Pa.,</i>	Arts and Science.
West, Nelson Leflin,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Wood, Joseph Remington,	<i>Flushing, N. Y.,</i>	Scientific.
Yarnall, Stanley Rhoads,	<i>Media, Pa.,</i>	Arts and Science.

Brinton, Richard,	<i>Thornbury, Pa.</i>
Nicholson, William Hopkins, Jr.,	<i>Philadelphia, Pa.</i>
Palen, Gilbert Joseph,	<i>Germantown, Pa.</i>
Shipley, William Ellis,	<i>Cincinnati, O.</i>

JUNIOR CLASS.

Bailey, Leslie Adelbert,	<i>Dresden, Me.,</i>	Arts and Science.
Brown, John Farnum,	<i>Villa Nova, Pa.,</i>	Arts and Science.
Davis, Francis F.,	<i>Coatesville, Pa.,</i>	Scientific.
Estes, Wilbur Albert,	<i>Sprague's Mills, Me.,</i>	Arts and Science.
Haughton, John Paul,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Haviland, Walter Winchip,	<i>Glens Falls, N. Y.,</i>	Arts and Science.
Hoag, Clarence Gilbert,	<i>Roxbury, Mass.,</i>	Arts and Science.
Jacobs, Carrol Brinton,	<i>West Chester, Pa.,</i>	Arts and Science.
Jones, George Lindley,	<i>Union Springs, N. Y.,</i>	Arts and Science.
Morton, Arthur Villiers,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Okie, John Mickle,	<i>Berwyn, Pa.,</i>	Scientific.
Osborne, Charles,	<i>North Weare, N. H.,</i>	Scientific.
Rhoads, Charles James,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Rhoads, Edward,	<i>Germantown, Pa.,</i>	Scientific.
Roberts, John,	<i>Downingtown, Pa.,</i>	Mechanical Eng.
Sensenig, Barton,	<i>Goodville, Pa.,</i>	Scientific.
Vaux, William Sansom, Jr.,	<i>Bryn Mawr, Pa.,</i>	Mechanical Eng.
Whitall, Franklin,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Wright, Gifford King,	<i>Germantown, Pa.,</i>	Arts and Science.
Woolman, Edward,	<i>Philadelphia, Pa.,</i>	Scientific.

SOPHOMORE CLASS.

Buselle, Alfred,	<i>New York, N. Y.,</i>	Mechanical Eng.
Chase, Oscar Marshall,	<i>Hazleton, Pa.,</i>	Mechanical Eng.
Collins, Charles,	<i>Purchase, N. Y.,</i>	Arts and Science.
Comfort, William,	<i>Germantown, Pa.,</i>	Arts and Science.
DeCou, John Allen,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Farr, Clifford Bailey,	<i>Wenonah, N. J.,</i>	Arts and Science.
Gardner, Larner Somers,	<i>Atlantic City, N. J.,</i>	Scientific.
Greene, Kane Stovell,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Lancaster, George,	<i>Wyoming, Pa.,</i>	Arts and Science.
Morris, Samuel Wheeler,	<i>Philadelphia, Pa.,</i>	Scientific.
Pinkham, Charles Heber,	<i>Woodfords, Me.,</i>	Arts and Science.
Quimby, Edward Entwisle,	<i>Philadelphia, Pa.,</i>	Scientific.
Rex, Frank Clayton,	<i>East Nantmeal, Pa.,</i>	Arts and Science.
Ristine, Frederick Pearce,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Rorer, Jonathan Taylor, Jr.,	<i>Hatboro, Pa.,</i>	Arts and Science.
Scarborough, Henry Wismer,	<i>Carversville, Pa.,</i>	Scientific.
Stokes, Francis Joseph,	<i>Germantown, Pa.,</i>	Arts and Science.
Strawbridge, William Justus,	<i>Germantown, Pa.,</i>	Mechanical Eng.
Taber, David Shearman, Jr.,	<i>New York, N. Y.,</i>	Arts and Science.
Williams, Parker Shortridge,	<i>Wynnewood, Pa.,</i>	Scientific.

Beale, Horace Alexander, Jr.,	<i>Parkesburg, Pa.</i>
Miller, Martin Nixon,	<i>Chestnut Hill, Pa.</i>
Pancoast, William Howard,	<i>Philadelphia, Pa.</i>
Shoemaker, Benj. Hallowell, Jr.,	<i>Germantown, Pa.</i>
Warden, Herbert Watson,	<i>Philadelphia, Pa.</i>
Warden, Nelson Bushnell,	<i>Philadelphia, Pa.</i>

FRESHMAN CLASS.

Bettle, Samuel,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Blanchard, Edmund, Jr.,	<i>Bellefonte, Pa.,</i>	Arts and Science.
Brown, Francis Head,	<i>Nicetown, Pa.,</i>	Scientific.
Conklin, Frank Henry,	<i>Brooklyn, N. Y.,</i>	Arts and Science.
Cookman, Charles Howland,	<i>Wilmington, Del.,</i>	Arts and Science.
Dean, George Brookhouse,	<i>Cincinnati, O.,</i>	Scientific.
Evans, Joseph Spragg, Jr.,	<i>West Chester, Pa.,</i>	Arts and Science.
Goodman, William,	<i>Cincinnati, O.,</i>	Mechanical Eng.
Hay, Erroll Baldwin,	<i>Philadelphia, Pa.,</i>	Scientific.
Johnson, Charles Hadley,	<i>Topeka, Kan.</i>	Scientific.
Lippincott, George,	<i>Wyncote, Pa.,</i>	Arts and Science.
Male, Jonathan Tamblyn,	<i>Beech Pond, Pa.,</i>	Arts and Science.
Miller, Harry March,	<i>Oxford, Pa.,</i>	Scientific.
Morris, Alfred Paul,	<i>Pottstown, Pa.,</i>	Mechanical Eng.
Palmer, Louis Jaquette,	<i>West Chester, Pa.,</i>	Arts and Science.
Taylor, Charles Clifford,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Thomas, Allen Curry,	<i>Philadelphia, Pa.,</i>	Scientific.
Thomas, Henry Evan,	<i>Philadelphia, Pa.,</i>	Scientific.
Webster, Walter Coates,	<i>West Grove, Pa.,</i>	Scientific.
Wood, Grahame,	<i>Philadelphia, Pa.,</i>	Scientific.

Carter, Charles Lybrand,	<i>Singerly, Md.</i>
Derderian, Nazaret K.,	<i>Constantinople.</i>
Griffith, Joseph Henry O.,	<i>Philadelphia, Pa.</i>
O'Neill, John Lamond,	<i>Haverford College, Pa.</i>
Supplee, William Wagner,	<i>Gulf Mills, Pa.</i>
Tatnall, Samuel Alsop,	<i>Wilmington, Del.</i>

SUMMARY.

Graduate Students,	9
Seniors,	21
Juniors,	20
Sophomores,	26
Freshmen,	26
	<hr/>
	102

ADMISSION.

CANDIDATES for admission to the Freshman Class in the COURSE IN ARTS AND SCIENCE will be examined as to their proficiency in the following requisites :

GREEK.—Grammar, scanning of hexameter verse ; Xenophon's *Anabasis*, four books ; Homer's *Iliad*, three books ; sight reading from Xenophon and Homer ; Jones's *Greek Composition*, twenty-five Exercises to be written with the accents.

LATIN.—Cæsar's *Gallie War* four books ; Vergil's *Æneid*, six books ; Cicero, six orations. Sight reading from Cicero, Cæsar, and Nepos. General questions on grammar, prosody, history, and mythology suggested by the text. Translation of easy prose from English into Latin. Harkness, Parts I. and II., or Jones's Exercises will indicate the amount necessary.

NOTE.—Equivalents in Greek and Latin will be accepted. Much importance is attached to ability to read at sight matter not previously studied.

MATHEMATICS.—Arithmetic, including the Metric System ; Algebra, through Radicals and Quadratic Equations ; Plane Geometry.

ENGLISH.—Grammar ; a short English Composition, correct in spelling, punctuation and expression. The subject will be drawn in 1892 from Longfellow's *Hiawatha* ; Hawthorne's *Twice Told Tales* ; Carlyle's *Essay on Burns* ; in 1893 from Macaulay's *Warren Hastings* ; Irving's *Bracebridge Hall* ; Tennyson's *Elaine* ; and in 1894 from Macaulay's two *Essays on Dr. Johnson*, Scott's *Lady of the Lake*, and Thackeray's *English Humorists*.

NOTE.—Other work of equal merit and extent will be accepted as equivalent.

HISTORY.—Greek, Roman and United States History.

MODERN LANGUAGES.—In place of the Greek the candidate may offer *both* German and French as follows :

German.—A thorough knowledge of the Grammar, ability to read at sight ordinary prose or poetry, and to translate English sentences into German. The minimum amount to be read may be indicated by

Whitney's *German Reader*, or Boisen's *German Prose*, Schiller's *Wilhelm Tell*, and a connected piece of prose like Storm's *Immensee* or Eichendorff's *Aus dem Leben eines Taugenichts*.

French.—A thorough knowledge of the Grammar; ability to read at sight ordinary prose or poetry, and to translate English sentences into French. The minimum amount to be read may be indicated by Super's *French Reader* (50 pp.), Knapp's *French Readings* (118 pp.), *Mlle. de la Seiglière*, *Esther*.

NOTE.—Equivalents in German and French will be accepted.

Candidates for admission to the Freshman Class in the SCIENTIFIC or ENGINEERING COURSE will be examined as follows:

LATIN.—As above.

MATHEMATICS.—As above, with the addition of the Properties and the Use of Logarithms.

ENGLISH.—As above.

HISTORY.—As above.

SCIENCE.—The elements of Physics, and Martin's *Human Body*, *Briefer course*, or an equivalent.

MODERN LANGUAGES.—Both German and French, as outlined above, may be substituted for the Latin of this course. This is advised in the Engineering Course.

The certificates of principals of first-class schools will, at the discretion of the President, be accepted in place of entrance examinations, so far as they cover the ground. Such teachers must fill up blank forms furnished on application. Certificates of private tutors will not be accepted.

Students not candidates for a degree may, at the discretion of the Faculty, be admitted to pursue special courses, for proficiency in which certificates may be granted; but this permission will be given only to students of sufficient age, ability, and diligence to insure their success.

Candidates may be admitted to advanced Classes if found on examination thoroughly fitted in all the regular studies of the Course up to the point at which they enter.

Each candidate must forward, together with his application, a certificate of good moral character from his last teacher; and students from other colleges must present certificates of honorable dismissal in good standing.

APPLICATIONS FOR ADMISSION must be made to the President. Entry blanks will be furnished on application. Rooms are assigned to old students in the order of seniority, and to new students in the order in which these entry blanks, properly filled up, are received at the President's office. Candidates will present themselves at Founders' Hall, for examination by the Faculty, *at 9.30 o'clock on the morning previous to Commencement Day*, or *at 9.30 o'clock on the morning previous to the beginning of the College Year*.

EXPENSES.

WITH the exceptions noted in the two following paragraphs, the price of Board and Tuition for undergraduates in the College Hall (together with fuel, lights, furniture, * and service) is five hundred dollars (\$500) a year.

There are a few large rooms in Barclay Hall, each of which may be taken by one student at an increased cost of twenty-five dollars a year, or by two at a decreased cost to each of seventy-five dollars a year.

A few students will be taken in Woodside Cottage. The charge will be \$375 for Board and Tuition.

The charge for Tuition is one hundred and fifty dollars (\$150) a year; for Tuition and mid-day meal, two hundred dollars (\$200) a year.

The College Laundry makes a reasonable charge for washing.

Students furnish their own books and stationery, and are charged for materials consumed and breakage in the Laboratories.

The charge for Board and Tuition for Graduate Students is three hundred dollars (\$300); for Tuition alone, one hundred dollars (\$100).

Bills for Board and Tuition are payable one-half at the beginning and one-half at the middle of the College Year.

*Students furnish their own towels and napkins. It will also be found convenient in many cases to supply their own study-room furniture.

SCHOLARSHIPS.

A FEW scholarships, varying in amount from \$100 to \$500, are at the disposal of the College.

These will be granted to properly qualified students who cannot afford to pay the full charges. In awarding the scholarships both character and intellectual preparation are taken into account. Students should send, with their application, certificates of moral character. The intellectual preparation is tested by examination. Blank forms on which the application must be written will be furnished by the President of the College. Candidates are advised to apply at an early date.

FELLOWSHIPS.

THE College has received a sum of money for the purpose of establishing four Graduate Fellowships, of the annual value of \$300 each,—the whole charge for Board and Tuition. By the conditions of the donors one of these will be given to a graduate of each of the following Colleges, viz.: Haverford, Earlham, Penn, and Wilmington; *Provided*, that the student shall be recommended by the President of the College at which he graduated, as likely to profit by the instruction given at Haverford, and that he shall be satisfactory to the Faculty of Haverford College.

Should there not be satisfactory applications for these Fellowships by Fourth month 1st, they may be otherwise disposed of.

COURSES OF INSTRUCTION.

IN THE Course of Arts and Science, Latin and Mathematics are required through two years. Should the student present Greek for admission, he is required to continue it for two years, and take German and French for one year. Should he present German and French for admission, he is required to continue them for two years. All these subjects may be continued as electives. Some election is allowed in the Junior year. The Senior year is largely elective.

In the Scientific Course, Latin is required one year (unless the student presents German and French for admission), and Mathematics two years. Particular attention is given to the Modern Languages and the Sciences throughout the course. Electives may be taken as in the course in Arts and Science.

In the Mechanical Engineering Course, the Freshman year is nearly the same as in the Scientific Course. After this there is divergence, the Engineering student taking more Mathematics, Mechanics, Shop Work and Drawing as required studies.

Scripture and Themes are required of all undergraduate students.

In the Elective Courses in the two upper years, which are taken with the advice and consent of the Faculty, students are expected to select studies having some relation to each other. In many cases it is desirable to concentrate the work in one department. The "Honor" System (see page 35) will, it is hoped, promote this object.

COURSE IN ARTS AND SCIENCE.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.
2. *Mathematics*. Sharpless's *Geometry*; Hall and Knight's *Higher Algebra*; Oliver, Wait, and Jones's *Trigonometry*. Four hours a week the first half-year, five the second.
3. *Greek*. (See note below.) Lysias, *Select Orations*; Herodotus, *Selections*; Homer, *Selections*; Translations at sight; Greek Composition. Four hours a week.
4. *Latin*. Livy; The Odes and Epodes of Horace; Review of Latin Grammar; Translation at sight (Cicero, *De Senectute* and *De Amicitia*); Prose Composition. Four hours a week.
5. *Rhetoric and English Composition*. *Principles of Rhetoric* (A. S. Hill); Readings in English Prose; Composition (exercises in the class-room); Themes. Two hours a week for the first half-year, one the second.
6. *Biology*. Martin's *Human Body*; Descriptive Botany with Plant Analysis. Two hours a week.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission will take elective studies in German and French.

SOPHOMORE CLASS.

1. *Scripture*. The Greek Testament, Luke's Gospel. One hour a week.
2. *Mathematics*. Smith's *Analytical Geometry*; Introductory *Calculus*; *Surveying*, with Field Practice. Three hours a week.
3. *Greek*. (See note below.) Plato *Apology* and *Crito*, or *Phaedo*; Æschylus, *Prometheus*; Aristophanes, *Frogs*; Lectures; Translation at sight (Xenophon, *Memorabilia*); Dictation Exercises in writing Greek. Three hours a week.
4. *Latin*. The *Germania* and *Agricola* of Tacitus; Selections from the Latin Poets; Cicero's *Letters*; Translations at sight (Cornelius Nepos); Prose Composition. Three hours a week.
5. *English Literature*. History of English Literature; Readings in English Poetry; Themes. Two hours a week the first half-year.
6. *History*. Outlines of Ancient History; Mediæval History. (Text-Book and Lectures.) Two hours a week the second half-year.
7. *Physics*. Stewart's *Lessons*, with Experimental Lectures, three hours a week, and Laboratory Work, two and one-half hours a week, the first half-year.
8. *Chemistry*. Elementary General Chemistry, three hours a week, and Laboratory Work, two and one-half hours a week, the second half-year.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission to the Freshman Class will take elective courses in German and French.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. One hour a week.
2. *German*. (For those who have not studied the language.) Joynes-Meissner's *Grammar*; Niebuhr's *Heroengeschichten*; Boisen's *Prose Extracts*; Translations at sight; Exercises in translating English into German. Four hours a week the second half-year.
3. *French*. (For those who have not studied the language.) Whitney's *Grammar*, Part I.; Knapp's *French Readings*; Composition (Whitney's *Grammar*, Part II.). Four hours a week the first half-year.
4. *Political Science*. Political Economy; Principles of Constitutional Law (Text-Book and Lectures). Two hours a week.
5. *Philosophy*. Logic and Psychology. Two hours a week.
6. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 28-31 enough to make 15 hours per week with their required studies. One course of Latin, Greek, or Mathematics must be taken.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. One hour a week.
2. *Ethics*. Two hours a week.
3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 28-31 enough to make 15 hours per week with their required studies.

SCIENTIFIC COURSE.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.

2. *Mathematics*. Sharpless's *Geometry*; Hall and Knight's *Higher Algebra*; Oliver, Wait, and Jones's *Trigonometry*; *Mechanics*. Six hours a week the first half-year, seven the second.

3. *Latin*. Livy; The Odes and Epodes of Horace; Review of Latin Grammar; Translations at sight (Cicero, *De Senectute* and *De Amicitia*); Prose Composition. Four hours a week.

NOTE.—Students presenting for admission Modern Languages in place of Latin will take advanced work in German and French instead of the Latin mentioned above.

4. *Rhetoric and English Composition*. *Principles of Rhetoric* (A. S. Hill); Readings in English Prose; Composition (exercises in the class-room); Themes. Two hours a week the first half-year, one the second.

5. *Biology*. General Biology. Plant Dissection. One recitation and one afternoon in the Laboratory each week.

6. *Drawing*. Five hours a week.

SOPHOMORE CLASS.

1. *Scripture*. Luke's Gospel. One hour a week.

2. *Mathematics*. Smith's *Analytical Geometry*; Introductory *Calculus*; *Surveying*, with Field Practice. Three hours a week.

3. *German*. Joynes-Meissner's *Grammar*; Niebuhr's *Heroengeschichten*; Boisen's *Prose Extracts*; Translations at sight; Exercises in translating English into German. Three hours a week.

4. *French*. Edgren's *Grammar*; Super's *French Reader*; Knapp's *French Readings*; Composition; Translations at sight. Three hours a week.

NOTE.—Students presenting for admission Modern Languages in place of Latin will take advanced work in German and French instead of that outlined above.

5. *English Literature*. History of English Literature; Readings in English Poetry; Themes. Two hours a week the first half-year.

6. *History*. Outlines of Ancient History; Mediæval History. (Text-book and Lectures.) Two hours a week the second half-year.

7. *Physics*. Stewart's *Lessons*, with Experimental Lectures, three hours a week, and Laboratory Work, two and one-half hours a week, the first half-year.

8. *Chemistry*. Elementary General Chemistry, three hours a week, and Laboratory Work, two and one-half hours a week, the second half-year.

9. *Biology*. Invertebrate and Vertebrate Morphology: Lectures and Laboratory Work. One recitation and one half-day in the Laboratory each week.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Teachings of Christ. One hour a week.

2. *German*. Lessing's *Minna Von Barnhelm*; Eichendorff's *Aus dem Leben eines Taugenichts*; Goethe's *Iphigenie*; Exercises in German Composition (based on Whitney's *German Grammar*). Three hours a week.

3. *French*. *Mlle. de la Seiglière*; Crane's *Tableaux de la Révolution Française*; *Athalie*; Composition; Lectures on the Language and Literature; Private Reading. (Examinations will be held upon some of the books suggested.) Three hours a week.

NOTE.—Students who have had two years in French and German may take studies from the elective list in their place.

4. *Political Science*. Political Economy; Principles of Constitutional Law. (Text-Book and Lectures.) Two hours a week.

5. *Philosophy*. Logic and Psychology. Two hours a week.

ELECTIVE STUDIES.

(Two to be selected.)

1. *Mathematics*. Analytical Geometry of Three Dimensions; Calculus. Three hours a week.

2. *Chemistry*. General and Analytical Chemistry; Lectures and Laboratory Work. Three hours a week.

3. *Physics*. Heat or Electricity; Experimental Lectures. Three hours a week.

4. *Biology*. Histology and Embryology. Three hours a week.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scriptures*. Life and Teachings of Christ. One hour a week.

2. *Ethics*. Two hours a week.

3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 28-31 enough to make 15 hours per week with their required studies.

MECHANICAL ENGINEERING COURSE.

In the first two years of the Engineering Course the same work is required as in the Scientific Course, except that Shop Work and Mechanical Drawing take the place of History and Biology.

Students are advised to substitute French and German for the Latin of the Freshman year.

During the last two years students in Mechanical Engineering give their time to Mathematics, Shop Work, Drawing, study of the Materials of Engineering, the Theory of Constructions, and other special Engineering work.

Scripture and Themes are required through the four years, a course in Chemistry in the Junior year, and a course in Ethics in the Senior year.

COURSE PREPARATORY TO THE STUDY OF MEDICINE.

Any regular student anticipating the study of medicine may make this course a part of his four years, leading to the degree of A.B. or S.B.

All students, regular or special, who have satisfactorily completed the course will receive a certificate to that effect.

FIRST YEAR.

<i>First Half-Year.</i>	<i>Second Half-Year.</i>
General Biology 3½ hours.	Botany 6 hours.
Physiology 5 "	Vertebrates 5 "
Invertebrate Biology . . 3½ "	Chemistry 6 "
Drawing 3 "	Mathematics 7 "
Mathematics 6 "	Latin or German and
Latin* or German and	French 5 "
French 5 "	

*Students presenting one of these for admission must take the other as a part of the course.

SECOND YEAR.

<i>First Half-Year.</i>		<i>Second Half-Year.</i>	
Histology	5 hours.	Embryology	5 hours.
Mammalian Anatomy . . .	5 "	Osteology	5 "
Chemistry	7½ "	Chemistry	7½ "
Physics	5½ "	Physics	7½ "
Geology	2 "	Logic	2 "
Psychology	2 "	English or History	2 "
English	2 "		

ELECTIVE COURSES.

Seniors and Juniors will elect from the following list, with the approbation of the Faculty, sufficient to make up the required number of hours.

HEBREW.

Grammar. Old Testament. Reading. [Prof. 3.]*

GREEK.

I. History of Greek Literature. Lectures; Selections for Reading.

[Prof. Gifford. 3.]

II. Selections from the Greek Orators; Æschylus; Pindar; Lectures on Greek Art and Antiquities. [Prof. Gifford. 3.]

III. Sophocles; Euripides; Thucydides; Dictation exercises in writing Greek. [Prof. Gifford. 3.]

IV. Patristic Greek, especially the Sub-Apostolic Literature.

[Prof. 2.]

V. Advanced Criticism of the New Testament.

[Prof. 2.]

Courses I. and II. are given in alternate years.

LATIN.

I. Horace, *Ars Poetica*; Juvenal, *Thirteen Satires*; Suetonius, *Divus Julius* and *Divus Augustus*; Tacitus, Selections from *Annals* and *History*; Plautus, *Captivi*; *Trinummus*; Cicero, Selections from Philosophical Works.

[Prof. Sanford. 3.]

II. Readings from the following authors will occupy two hours each week during the College year. Pliny, *Letters*; Vergil, *Bucolics*; Terence, *Adelphi*; Lucretius, Catullus, Tibullus, Propertius, Ovid, Lucan.

One hour each week during the year will be occupied as follows: During the first half, Lectures and Examinations on the Topography of Italy, and particularly on the Topography, Buildings, Statuary, etc., of Ancient Rome; during the second half of the year an outline of the whole of Roman Literature.

[Prof. Sanford. 3.]

* These figures represent the number of hours per week. In Laboratory Work, etc., two and a half hours count as one.

ENGLISH.

I. ANGLO-SAXON.—Sweet, *Anglo-Saxon Reader*; Cynewulf's *Elene*; Lectures. [Prof. Gummere. 2.]

II. ENGLISH LITERATURE IN THE FOURTEENTH CENTURY.—Chaucer's *Canterbury Tales*. Lectures. [Prof. Gummere. 1.]

III. SHAKSPERE.—*Lear, Hamlet, Tempest, As You Like It*; Lectures on Elizabethan Poetry. [Prof. Gummere. 2.]

IV. ADVANCED ENGLISH COMPOSITION.—Exercises in Composition; Discussion of special work; Readings in English Prose. [Prof. Gummere. 1.]

Only those who have attained good rank in themes for the Freshman and Sophomore years will be admitted to this class. Members of it will be exempted from regular theme work.

V. ENGLISH LITERATURE OF THE EIGHTEENTH AND NINETEENTH CENTURIES.—Selections from Representative Authors; Lectures; Private Readings. [Prof. Gummere. 2.]

This course will be omitted in 1892-93.

GERMAN.

I. MIDDLE-HIGH-GERMAN.—Paul, *Mittelhochdeutsche Grammatik*. Selections from the Poems of Walther von der Vogelweide. *Das Niebelungenlied*. [Prof. Gummere. 2.]

II. GOETHE AND SCHILLER.—*Faust; Wallenstein*; Selected Poems; History of German Literature; Exercises in German Composition. [Prof. Gummere. 3.]

III. Lessing's *Minna von Barnhelm*; Selections from German Prose; Exercises in German Composition. [Prof. Gummere. 3.]

FRENCH.

I. Course in Molière; Darmesteter and Hatzfeld's *Le Seizième Siècle en France*; Lectures; Themes in French; Private Reading. [Prof. Ladd. 2.]

II. Daudet's *Contes*; Blouët's *L'Eloquence de la Chaire Française*; Corneille's *Le Cid*; Racine's *Phèdre*; Crane's *Le Romantisme Française*; Hugo's *Hernani*; Exercises in Composition and Idioms; Lectures on the Language and Literature; Private Reading. [Prof. Ladd. 3.]

III. *Mlle. de la Seiglière*; Crane's *Tableaux de la Révolution Française*; *Athalie*; Composition; Lectures on the Language and Literature; Private Reading. [Prof. Ladd. 3.]

IV. Classical Juniors may continue the study of French the second half-year. The work will be similar to III. [Prof. Ladd. 2.]

MATHEMATICS.

I. Calculus; Analytical Geometry of three Dimensions (Smith). [Prof. Morley. 3.]

II. Introduction to the Theory of Functions: Differential Equations (For syth.) [Prof. Morley. 3.]

- III. Modern Geometrical Methods. [Prof. Morley. 3.]
 IV. Dynamics of a Particle; Statics. [Prof. Brown. 3.]
 V. Attractions and Potential; Rigid Dynamics [Prof. Brown. 3.]

HISTORY AND POLITICAL SCIENCE.

- I. Mediæval and Modern European History. [Prof. Thomas. 2.]
 This course will not be given in 1892-93.
 II. Political and Constitutional History of England from the Anglo-Saxon Conquest to the Restoration. [Prof. Thomas. 3.]
 III. Political and Constitutional History of England from the Restoration to the present time. [Prof. Thomas. 3.]
 Courses II. and III. are intended to be given in alternate years.
 IV. American Colonial History to 1783; Europe and America during the Eighteenth Century. [Prof. Thomas. 3.]
 V. Constitutional and Political History of the United States, 1783 to 1865. [Prof. Thomas. 3.]
 Courses IV. and V. are intended to be given in alternate years.
 VI. Theory of the State. [Prof. Thomas. 3.]
 VII. History of Political Economy; Selected topics for investigation. [Prof. Thomas. 3.]
 Courses VI. and VII. will not be given in 1892-93.
 VIII. Ecclesiastical History. The Doctrines and Discipline of the Church as far as the first Council of Nicæa (A.D. 325). [Prof. 3.]

ASTRONOMY.

- I. Practical Astronomy, with Observatory Practice. [Prof. Leavenworth. 2.]
 II. Descriptive Astronomy. (Half-year.) [Prof. Leavenworth. 2.]

CHEMISTRY.

- I. General Chemistry; Lectures and Laboratory Work. [Prof. L. B. Hall. 3 or more.]
 II. Analytical Chemistry; Lectures and Laboratory Work. [Prof. L. B. Hall. 3 or more.]
 III. Organic Chemistry; Lectures and Laboratory Work. [Prof. L. B. Hall. 2.]

BIOLOGY.

- I. Invertebrates; Lectures and Laboratory Work. [Dr. W. S. Hall. 2.]
 II. Vertebrates; Lectures and Laboratory Work. [Dr. W. S. Hall. 2.]
 III. Histology; Lectures and Laboratory Work [Dr. W. S. Hall. 3.]
 IV. Embryology; Lectures and Laboratory Work. [Dr. W. S. Hall. 3.]
 V. Mivart's *Cat*; Laboratory Work. [Dr. W. S. Hall. 2 or 3.]
 VI. Mammalian Osteology; Laboratory Work. [Dr. W. S. Hall. 2 or 3.]
 Courses I., III., and V. will be given the first half-year, and Courses II., IV., and VI. the second half-year.

GEOLOGY.

- Elementary Geology; Recitations and Field Work. (Half-year.) [Dr. W. S. Hall. 2.]

ENGINEERING.

- I. Materials of Construction ; Theory of the Steam Engine.
[Prof. Edwards. 2.]
- II. Descriptive Geometry ; Elements of Mechanism. [Prof. Edwards. 2.]
Courses I. and II. will be given in alternate years.
- III. Machine Design and Draughting. (Open only to Engineering Students.) [Prof. Edwards. 2.]
- IV. Practical Mechanics. [Prof. Edwards. 2.]

PHYSICS.

- I. Mathematical Physics. [Prof. Thompson. 3.]
- II. Physical Optics ; Lectures and Laboratory Work.
[Prof. Thompson. 2.]
- III. Theory of Heat and Electricity ; Laboratory Work.
[Prof. Thompson. 2.]
- Courses II. and III. will be given in alternate years.

PHILOSOPHY.

- I. The History of Philosophical Thought ; lectures and text-book.
[Prof. .]
- II. Advanced studies in Psychology. [Prof. .]
- III. Special studies : "Principles of Human Knowledge," Berkeley ;
"Critique of Pure Reason," Kant. [Prof. .]

LECTURES.

THE Lectures and Courses of Lectures to the whole college for the year 1890-91 were as follows :

Home Rule,	Theodore Fry, M.P.
The Literary Study of the Bible,	Richard G. Moulton.
The Alcestis,	Richard G. Moulton.
The Historic Schools of England,	President Sharpless
The Wrong Side of the Moon,	Prof. J. R. Harris.

GRADING OF STUDENTS.

STUDENTS are divided, according to their grades, into five sections, A, B, C, D, E. Each student is notified of the section to which he has been assigned, but the grades are not published. Section E is composed of those who cannot be advanced to the next higher class, nor receive their Bachelor's degree. Daily recitations, hour examinations, and final examinations are all used as elements in determining the standing of a student.

ADVANCED DEGREES.

BACHELORS OF ARTS and BACHELORS OF SCIENCE of three years' standing may take the degrees of MASTER OF ARTS or MASTER OF SCIENCE, on submitting to the Executive Committee satisfactory evidence of continued good character, and passing an examination on some literary or scientific course of study which shall receive the approbation of the Faculty and Managers.

The following are stated as adequate courses of study to be presented by candidates for a second degree. Particulars can be had on application to the President.

I. Hebrew. Mitchell's Gesenius' Hebrew Grammar. Critical and philological reading and analysis of I. and II. Samuel; I. and II. Kings. Sight reading of Genesis, unpointed (edition of Muehlau et Kautzsch, Lipsiæ, 1885).

II. Assyrian. Lyon's Assyrian Manual. Friedrich Delitzsch's Assyrische Lesestücke. Syllabare (Sb. Sc.) S. 53-75. Neuassyrische Text, (S. 110, 4-121).

III. The whole of the New Testament in Greek, with the introduction to N. T. of Scrivener, and of Westcott and Hort.

IV. The whole of Thucydides, together with Grote and Curtius on the Peloponnesian War; Greek composition.

V. Twelve Tragedies of Æschylus, Sophocles, or Euripides; Greek composition.

NOTE.—A course similar to IV. and V. may be arranged in other Greek authors.

VI. Cicero's Tusculan Disputations (five books), De Natura Deorum and De Officiis, together with the History of Ancient Philosophy; Latin composition.

VII. Mommsen's and Merivale's Histories; the whole of Tacitus; Pliny's Letters; Latin composition.

VIII. German Literature, with translation at sight from any of the leading authors, and an essay in German.

IX. French Literature, with translation at sight from any of the leading authors, and an essay in French.

X. Greek Literature, with translation at sight from any of the leading authors, and an essay in Greek.

XI. Latin Literature, with translation at sight from any of the leading authors, and an essay in Latin.

XII. Pure Mathematics. Two of the following:

a. Introduction to the Theory of Functions. Elliptic Functions.

b. The Theory of Plane Curves.

c. Theory of Equations and Substitutions.

The course will require a knowledge of the Differential and Integral Calculus, such as is gained from the works of Williamson and Byerly.

XIII. Applied Mathematics.

- a.* Attraction and Potential. Rigid Dynamics.
- b.* Partial Differential Equations and Spherical Harmonics.
- c.* Hydrostatics and Hydrodynamics.
- d.* Lunar and Planetary Theories.

The course will require an elementary knowledge of the application of the Calculus to Dynamics.

XIV. Theoretical Astronomy (Computation of an Orbit—Oppolzer, Watson, or Gauss).

XV. Practical Astronomy (Chauvenet and Doolittle); Observatory Work.

XVI. Rankine's Applied Mechanics, or Rankine's Civil Engineering.

XVII. European History; Political, Constitutional, Economic.

XVIII. American History; Political, Constitutional, Economic.

Courses in History can be arranged by consultation with the Professor in charge of the department.

XIX. Ecclesiastical History. A general knowledge of the leading facts in Early Church History and an acquaintance with Greek and Latin will be required; a special subject may be selected from the following:

- a.* The writings of Barnabas and Justin and the Teaching of the Twelve Apostles.
- b.* The Clementine and Ignatian Epistles.
- c.* The Development of Christian Institutions (Stanley, Hatch, etc.).
- d.* The Ecclesiastical History of Eusebius.

XX. Germanic Philology and Literature. (One of the following to be selected):

a. Anglo-Saxon.—Grein's *Bibliothek der angelsächsischen Poesie*; Sweet's Edition (Early English Text Society) of the Anglo-Saxon Version of the *Cura Pastoralis*; Cook's Sievers' Anglo-Saxon Grammar. A knowledge of Gothic Grammar is required in this as in the next course.

b. Middle High German.—*Das Nibelungenlied*; Walther von der Vogelweide; *Gudrun*; History of Early German Literature; Old High German Grammar.

c. Old Norse.—A course similar to *a* and *b* can be arranged in Old Norse Literature and Philology.

XXI. English Literature. An intimate acquaintance with the authors of some characteristic epoch will be required, and a good English style, manifested in an original essay.

XXII. Physics. Any two of the following, with Laboratory work. Mechanics (Sturm); Fluid Motion (Lamb); Thermodynamics (Clausius); Electricity and Magnetism (part of Mascart and Joubert); Acoustics (Donkin); Geometrical Optics (Heath); Physical Optics (Preston).

The Laboratory work required will, in general, be along the lines of the student's reading, and will consist either in the skillful repetition of some piece of research, or in some independent work of scientific value.

XXIII. Comparative Morphology.

XXIV. General Pathology.

XXV. Comparative Embryology.

XXVI. Chemistry.

XXVII. Political Economy. } Courses in these subjects can be arranged
by consultation with the Professor in charge
of the department.

Dissertations may be required in addition to examinations.

Candidates who are examined may also, if they desire, hand in Dissertations on topics in the field of study which they have specially investigated.

Resident Graduates, who have completed an adequate course of study, may be admitted to an examination for a second degree before the expiration of three years, if the Faculty deem it proper.

Graduates of other Colleges and Scientific Schools of good standing, who present satisfactory evidence of character and qualifications, will be admitted as candidates for the degree of Master of Arts. One year's residence at Haverford College will be required of all such students.

Bachelors of Arts and Science may be examined for the degrees of DOCTOR OF PHILOSOPHY and DOCTOR OF SCIENCE; but such degrees will be conferred only after satisfactory proof of the faithful and successful prosecution of courses of study fully equal in extent and quality to those required for similar honors in the best Universities.

Notice of application for examination must be given to the President two months before Commencement. The examinations for non-residents will be held during the last week in the Fifth month, and in no case at a later date. The fee for the Diploma of the Second Degree is Twenty Dollars, of subsequent degrees Thirty Dollars, to be paid in all cases before the 10th of the Sixth month.

ALUMNI PRIZE FOR COMPOSITION AND ORATORY.

THE Association of the Alumni, in the year 1875, established an ANNUAL PRIZE, either of a Gold Medal or of an equivalent value in Books and a Bronze Medal, for excellence in Composition and Oratory.

The prize was awarded last year to DAVID H. BLAIR, of the class of 1891, for his oration on "The Negro Question."

The following are the rules governing the competition :

1. The Alumni Medal is offered yearly to the competition of the members of the Senior and Junior Classes, as a prize for the best delivered oration prepared therefor. The oration to be handed in to the Professor of English not later than Twelfth month first.

II. Three or five Judges shall be appointed from year to year by the Alumni Committee, who shall, on the evening of the last evening but one before the winter vacation, hear publicly, in Alumni Hall, all competitors who may be qualified to appear.

III. No oration shall occupy in delivery more than fifteen minutes.

IV. In making their award, while due weight is given to the literary merits of the oration, the Judges are to consider the prizes as offered to encourage more especially the attainment of excellence in elocution.

V. The Judges shall have the right to withhold the prize if the elocution and the literary merits of the oration fall below a suitable standard of excellence.

PRIZES FOR SYSTEMATIC READING.

Two prizes, of \$60 and \$40 respectively, will be given to those members of the Junior Class who, having creditably pursued their regular studies and paid proper attention to physical culture, shall have carried on the most profitable courses of reading of standard authors during the Sophomore and Junior years.

The direction of the work and the decision as to the award of the prizes shall be in the hands of a committee consisting of the President, the Librarian, and the Professor of English.

Either or both prizes may be omitted if, in the judgment of the committee, the work done does not justify the award.

HONORS.

FOR the purposes of Honors studies are divided as follows :

I. Ancient Languages and Literature.

II. Modern Languages and Literature.

III. Mathematics, Physics, and Astronomy.

IV. Chemistry and Biology.

V. History, Philosophy, and Political Science.

Students candidates for Honors shall elect from one group at least five hours per week during the Junior year and eight hours per week during the Senior year, and shall make their announcements of candidacy at the beginning of the Junior year.

First and second Honors may be given, dependent on the judgment of the Professors immediately interested, to be decided by special examination or otherwise.

Honors shall be announced at Commencement and in the succeeding catalogue.

LIBRARY.

LIBRARIAN, Professor Allen C. Thomas; J. Wetherill Hutton, *Assistant*.

THE number of bound volumes in the Library of Haverford College is 25,880; exclusive of the Baur Library the number is 19,240. Numerous American and European periodicals, scientific and literary, are taken by the Library.

Through the liberality of friends of the College the theological and miscellaneous library of the late Gustav Baur, for many years Professor of Theology in the University of Leipsic, was bought and given to the College in 1889. It consists of 6,640 volumes, besides several thousand pamphlets. It is rich in theology, Oriental languages, and in German literature. It has been classified, and a card catalogue prepared.

From Walter Wood and Professor J. Rendel Harris were received in 1890 forty-seven manuscripts, collected by Professor Harris while in the East. They are chiefly Oriental, and have been fully catalogued and described in Haverford College Studies No. 4.

The Library is open as a reading-room from 9.30 A.M. to 6 P.M., during which time the volumes in the alcoves may be freely consulted. The Librarian devotes stated hours each week to the purpose of assisting and directing students in their reading, and in the intelligent use of books of reference and of authorities. He also arranges courses of reading.

CHEMICAL LABORATORY.

DIRECTOR, Dr. Lyman B. Hall.

THE Laboratory Work comprises elementary experiments in General Chemistry; an extended study of the more important elements and their compounds; qualitative and quantitative analysis; the preparation of pure compounds; and experimental work illustrating chemical laws and theories.

Students may substitute for the last two years of the Scientific Course a special course in Chemistry, embracing both theory and laboratory work.

Opportunity is given for elementary or advanced special work, with ample facilities for its prosecution.

PHYSICAL LABORATORY.

DIRECTOR, Dr. J. O. Thompson.

THE Physical Laboratory occupies five medium-sized rooms, and is well equipped for work in the different departments of Physics. The apparatus has been selected with especial reference to quantitative rather than qualitative work, and includes in every department exact standards. The department of electricity has been exceptionally well equipped, and additions are gradually being made to the apparatus in all departments.

The students are instructed in the accurate measurement of various physical quantities in mechanics, heat, light, and electricity. They are also assigned a certain amount of qualitative work leading up to a more intimate knowledge of the properties of matter.

The work of the more advanced students is supplemented by reading in the foreign and domestic scientific journals which are accessible in the Library.

BIOLOGICAL LABORATORY.

DIRECTOR, DR. W. S. Hall.

THE Biological Laboratory has, among its appointments, sixteen compound microscopes, three microtomes, turn-tables, warm-stages, dissecting microscopes, injecting appliances, photographic appliances, stage and eyepiece micrometers, incubators, water baths, glassware, reagents, aquaria, etc. Also a reference library of 200 recent works on Biology.

Students taking the Scientific Course work in the Laboratory two and a half hours a week during the Freshman and Sophomore years.

General Biology.—First half-year. General experiments, the Pteris fern, the earthworm; Sedgwick and Wilson's *Introduction to General Biology*.

Botany.—Second half-year. Gross and minute structures of types of each plant series; Arthur, Barnes and Coulter's *Plant Dissection*.

I. *Invertebrates*.—First half of second year. Gross and minute anatomy of representative types; Brooks' *Invertebrate Zoology*.

II. *Vertebrates*.—Last half of second year. Gross anatomy of fish, frog, turtle, pigeon, and rabbit.

III. *Histology*.—Elective half-year. Schaeffer's *Essentials of Histology* and Klein's *Histology*.

IV. *Embryology*.—Elective half-year. Embryology of the chick.

V. and VI. *Advanced Work* in the gross anatomy and in the comparative osteology of mammals.

MUSEUM.

CURATOR, Dr. W. S. Hall; ASSISTANT CURATORS, L. A. Bailey, Geo. L. Jones.

ORNITHOLOGY, Mineralogy, Geology, Conchology, Paleontology, and Invertebrate Zoology are well represented. To the last-named collection 160 species were added during the year. The Herbarium

contains about 1,500 species, many of which are foreign. Specimens in each department are classified and catalogued, and are used by lecturers and students in the class-rooms and laboratories.

MECHANICAL LABORATORY.

DIRECTOR, Professor Levi T. Edwards.

THE MECHANICAL LABORATORY occupies a commodious building erected in 1890 especially for the Engineering Department. It contains a machine shop, carpenter shop, blacksmith shop, foundry, draughting room, blue-printing room, and stock room. The machine shop contains, besides several complete sets of machinists' tools for vise work, several lathes, a planer, sharper, drill press, vises, etc. The carpenter shop contains several complete sets of carpenters' tools, two wood lathes, and a band saw. The foundry and blacksmith shop are well equipped.

The instruction begins with a series of graded exercises, which teach accuracy in the use of tools and illustrate the principles of machine construction. This is followed by practice in the construction of parts of machinery and the building of complete machines.

The students, under the care of the Director, are taken from time to time to visit machine shops and engineering constructions in Philadelphia and vicinity.

ASTRONOMICAL OBSERVATORY.

DIRECTOR, Professor F. P. Leavenworth.

THE HAVERFORD OBSERVATORY affords the students the means of becoming familiar with the use of astronomical instruments, and of acquiring, from actual observation, a practical acquaintance with Astronomy.

It contains two Equatorial Telescopes, one by Clark, having an object-glass 10 inches in diameter, and one with an object-glass of

8 $\frac{1}{4}$ inches, with filar micrometer and eye-pieces ; a polarizing eye-piece ; a Newtonian Reflector, with a silver-on-glass speculum of 8 $\frac{1}{4}$ inches diameter ; a Prism Spectroscope ; a Meridian Transit Circle having a Telescope of 3 $\frac{3}{4}$ inches aperture, with a circle at each end of the axis 26 inches in diameter ; a Zenith Instrument of 1 $\frac{3}{4}$ inches aperture, with a micrometer ; two Sidereal Clocks, one with mercurial compensation, the other used to connect with a Bond's Magnetic Chronograph.

The latitude of the observatory is 40° 0' 40'' N. ; its longitude, 6 minutes 59.4 seconds East from Washington.

A Special Course in Astronomy is offered to amateurs and teachers. The requisites for the course and the fees charged will depend on the work which the applicant desires to perform.

THE GYMNASIUM.

PHYSICAL EXAMINER, Dr. W. S. Hall ; DIRECTOR, G. H. Bickford.

THE GYMNASIUM is fitted with the apparatus of Dr. D. A. Sargent, of Harvard University. The Director gives systematic instruction based upon careful physical examination. Required work begins Twelfth month 1st and ends Fourth month 1st, and occupies three hours each week. It is arranged in three courses, each occupying one season. Students entering the Freshman Class are required to take the three courses, one each year, unless given advanced standing on previous systematic gymnasium drill. Students entering the Sophomore Class are required to complete two of the courses, with a privilege of taking advanced standing.

LITERARY SOCIETIES.

THE LOGANIAN SOCIETY was established by the Officers and Students in 1834.

THE EVERETT-ATHENÆUM is a literary society of the students.

DEGREES GRANTED IN 1891.

AT the Commencement in 1891 Degrees were granted after examination to the following graduates:

MASTER OF ARTS.

CHARLES FREDERIC BRÉDÉ,	MYRON FRANCIS HILL,
LAWRENCE MARSHALL BYERS,	JESSE EVANS PHILIPS, JR.,
WILLIAM HUNT CARROLL,	LUCIAN MOORE ROBINSON,
HENRY LEE GILBERT,	LINDLEY MURRAY STEVENS,
EDWIN JAMES HALEY,	ROBERT RICHARDSON TATNALL,
DILWORTH P. HIBBERD,	WILLIAM FREDERICK WICKERSHAM.

MECHANICAL ENGINEER.

JOSEPH ESREY JOHNSON, JR.

BACHELOR OF ARTS.

HARRY ALGER,
DAVID HUNT BLAIR,
HENRY ARNOLD TODD.

BACHELOR OF SCIENCE.

WILLIAM WINDER HANDY,	DAVID LANE MEKEEL,
ARTHUR HOOPES,	JOHN STOKES MORRIS,
JOHN WETHERILL HUTTON,	GEORGE THOMAS, 3D,
ALLEN BALLINGER CLEMENT, Class of 1887.	

DOCTOR OF LAWS.

The degree of Doctor of Laws was bestowed *honoris causa* upon RICHARD M. JONES, of the Class of 1867.

LIST OF GRADUATES AND HONORARY DEGREES.

(Degrees conferred by other institutions are indicated by *italics*.)

The only degree granted on graduation before 1877 was that of Bachelor of Arts.

GRADUATES.

- | | |
|--|--|
| <p style="text-align: center;">1836</p> <p>Thomas F. Cock, <i>M.D.</i>, LL.D.
Joseph Walton</p> <p style="text-align: center;">1837</p> <p>*William C. Longstreth, *1881
*David C. Murray, *1885
Lindley Murray
*Benjamin V. Marsh, *1882
*Joseph L. Pennock, *1870
Robert B. Parsons
*Charles L. Sharpless, *1882
*Lloyd P. Smith, A.M., *1886
*B. Wyatt Wistar, *1869</p> <p style="text-align: center;">1838</p> <p>*James V. Emlen, <i>M.D.</i>, *1880
John Elliott</p> <p style="text-align: center;">1839</p> <p>Frederick Collins
Thomas P. Cope
Henry Hartshorne, <i>M.D.</i>, A.M., LL.D.
Nereus Mendenhall, <i>M.D.</i>
Richard Randolph, Jr., <i>M.D.</i>
*Charles Taber, *1887</p> <p style="text-align: center;">1840</p> <p>*Joseph Howell, *1889
Anthony M. Kimber
*Henry H. G. Sharpless, *1870
*John R. Winslow, <i>M.D.</i>, *1866</p> <p style="text-align: center;">1841</p> <p>*Richard H. Lawrence, *1847
*James P. Perot, *1872
*Elias A. White, *1866</p> <p style="text-align: center;">1842</p> <p>Robert Bowne
Richard Cadbury
*William S. Hilles, *1876
*Thomas Kimber, Jr., LTT.D., *1890
James J. Levick, <i>M.D.</i>, A.M.
Edmund Rodman, A.M.
Thomas R. Rodman, A.B.
Benjamin R. Smith
Augustus Taber
Caleb Winslow, <i>M.D.</i></p> | <p style="text-align: center;">1843</p> <p>Robert B. Howland
Francis White
*William D. Stroud, <i>M.D.</i>, *1883</p> <p style="text-align: center;">1844</p> <p>Evan T. Ellis
Robert B. Haines
Isaac Hartshorne</p> <p style="text-align: center;">1845</p> <p>Edmund A. Crenshaw
*Robert Pearsall, *1849</p> <p style="text-align: center;">1849</p> <p>Albert K. Smiley, A.M.
Alfred H. Smiley, A.M.</p> <p style="text-align: center;">1851</p> <p>Joseph L. Bailey
Philip C. Garrett
Thomas J. Levick
Franklin E. Paige, A.M.
Zaccheus Test, <i>M.D.</i>, A.M.
James C. Thomas, <i>M.D.</i>, A.M.
Richard Wood</p> <p style="text-align: center;">1852</p> <p>Dougan Clark, <i>M.D.</i>
Lewis N. Hopkins
William L. Kinsman
William E. Newhall
James Whitall</p> <p style="text-align: center;">1853</p> <p>William B. Morgan, A.M.
William H. Pancoast, <i>M.D.</i>, A.M.</p> <p style="text-align: center;">1854</p> <p>Frederick Arthur, Jr.
John W. Cadbury
John B. Garrett
David Scull, Jr.</p> <p style="text-align: center;">1855</p> <p>*Samuel Bettie, *1859
John R. Hubbard, A.M.</p> |
|--|--|

1856

Bartholomew W. Beesley
 Joel Cadbury, Jr.
 Jonathan J. Comfort, *M.D.*
 *James M. Walton, *1874
 Edward R. Wood, A.M.

1857

Jesse S. Cheyney, A.M.
 *Cyrus Mendenhall, *1858
 Stephen Wood

1858

Thomas H. Burgess
 Thomas Clark
 Daniel W. Hunt
 *Samuel T. Satterthwaite, *1865
 William G. Tyler
 Thomas Wistar, A.M., *M.D.*
 Ellis H. Yarnall, *LL.B.*

1859

*Richard W. Chase, *1865
 James R. Magee
 *Richard C. Paxson, *1864
 *Edward Rhoads, *M.D.*, *1871
 Edward C. Sampson
 *George Sampson, *1872
 Abram Sharples, *M.D.*
 Benjamin H. Smith

1860

*Lindley M. Clark, *1861
 *William B. Corbit, *M.D.*, *1882
 *William M. Corlies, *1881
 Cyrus Lindley
 Theodore H. Morris
 Frederick W. Morris
 Richard Pancoast
 John W. Pinkham, *M.D.*
 Francis Richardson
 Clement L. Smith, A.M., *LL.D.*
 James Tyson, *M.D.*, A.M.
 Silas A. Underhill, *LL.B.*

1861

Edward Bettle, Jr.
 *Henry Bettle, *1886
 *Charles Bettle, *1883
 William B. Broomall
 Charles H. Jones
 *Thomas W. Lamb, A.M., *M.D.*, *1878
 William N. Potts
 Jehu H. Stuart, A.M., *M.D.*
 John C. Thomas.

1862

Henry T. Coates, A.M.
 *Samuel A. Hadley, *1864
 Horace G. Lippincott

George B. Mellor
 Horace Williams, *M.D.*
 Isaac F. Wood

1863

Thomas J. Battey, A.M.
 George M. Coates, Jr., A.M.
 William M. Coates
 *Richard T. Jones, *1869
 William H. Morris
 Joseph G. Pinkham, *M.D.*, A.M.

1864

*Franklin Angell, A.M., *1882
 *William Ashbridge, *M.D.*, *1884
 Edward H. Coates
 Howard M. Cooper, A.M.
 Albin Garrett
 Morris Longstreth, *A.B.*, *M.D.*, A.M.
 Albert Pancoast
 Charles Roberts
 E. Pope Sampson
 *Edward L. Scull, *1884
 *Randolph Wood, *1876

1865

John R. Bringhurst
 Edward T. Brown
 James A. Chase
 Joseph M. Downing
 Arthur Haviland
 *David H. Nichols, *1865
 Henry W. Sharpless
 *George Smith, Jr., *1872
 Robert B. Taber, A.M.
 Allen C. Thomas, A.M.
 Benjamin A. Vail
 Caleb Cresson Wistar

1866

A. Marshall Elliott, A.M.
 Benjamin E. Valentine, *LL.B.*

1867

*John Ashbridge, *1881
 George Ashbridge, A.M., *LL.B.*
 William P. Clark, A.M., *LL.B.*
 Samuel C. Collins, A.M.
 Nathaniel B. Crenshaw
 Charles H. Darlington, A.M.
 *William T. Dorsey, *M.D.*, *1870
 B. Franklin Eshleman
 Richard M. Jones, A.M., *LL.D.*
 *Charles W. Sharpless, *1889
 Walter Wood

1868

Edward H. Cook
 *Alexis T. Cope, *1883
 Benjamin C. Satterthwaite

Louis Starr, *M.D.*
S. Finley Tomlinson
Joseph H. Wills, A.M., *M.D.*

1869

Johns H. Congdon
Henry Cope, A.M.
Ludovic Estes, *A.M.*
*Henry Eval, A.M., *1877
*William B. Kaighn, *1876
Pendleton King, A.M.
William H. Randolph.
Edward B. Taylor, *M.C.E.*
William S. Taylor
James G. Whitlock
Walter Wood
Henry Wood, *Ph.D.*

1870

J. Stuart Brown
John E. Carey
Alford G. Coale
Howard Comfort
T. Allen Hilles
William H. Hubbard, *M.D.*
*Thomas K. Longstreth, A.M., *1883
Oliver G. Owen, A.M.
Charles E. Pratt, A.M.
David F. Rose
*John D. Steele, *1886
Charles Wood, A.M.
Stuart Wood, *Ph.D.*

1871

Henry G. Brown
William P. Evans
John S. Garrigues
Reuben Haines, A.M.
William H. Haines
Joseph Hartshorne
Jesse F. Hoskins
Walter T. Moore
Ellis B. Reeves
Alfred R. Roberts, *C.E.*
Charles S. Taylor
Edward D. Thurston
Randolph Winslow, *M.D.*, A.M.

1872

Richard Ashbridge, *M.D.*
Richard T. Cadbury, *A.B.*, A.M.
James Carey, Jr., *LL.B.*
Thomas S. Downing, Jr.
Walter Erben
Thomas Roland Estes
John E. Forsythe
William H. Gibbons, A.M.
Francis B. Gummere, *A.B.*, A.M., *Ph.D.*
Casper Wistar Haines, A.M., *C.E.*
Abram Francis Huston
*Marmaduke Cope Kimber, A.M., *1878
William M. Longstreth
Richard H. Thomas, *M.D.*

1873

James C. Comfort
Thomas P. Cope, Jr.
George W. Emlen
Joseph M. Fox
Henry C. Haines
Benjamin H. Lowry, A.M.
Alden Sampson, A.M.
*Julius L. Tomlinson, A.M., *1890

1874

Edward P. Allinson, A.M.
John G. Bullock
James Emlen
Charles R. Hartshorne, *LL.B.*
Samuel E. Hilles
John B. Jones
*Mahlon Kirkbride, *1889
Theophilus P. Price
James B. Thompson
Joseph Trotter

1875

Edward K. Bispham
Alonzo Brown, A.M.
J. Franklin Davis, A.M.
Charles E. Haines
William Hunt, Jr.
Charles L. Huston
Harold P. Newlin
Walter W. Pharo
Charles E. Tebbetts
Miles White, Jr.

1876

Francis G. Allinson, A.M., *Ph.D.*
David S. Bispham
Keuben Colton
Henry W. Dudley
Seth K. Gifford, A.M.
L. Lyndon Hobbs, A.M.
Richard H. Holme
*Thomas William Kimber, *1885
Charles A. Longstreth
J. Whitall Nicholson
Percival Roberts, Jr.
Frank H. Taylor
Howard G. Taylor
*Lewis A. Taylor, *1881

1877

A. B.

Isaac W. Anderson
Frederic L. Baily
Isaac Forsythe
James D. Krider
George G. Mercer, *LL.M.*, *J.C.D.*
Wilson Townsend

S. B.

William F. Smith

1878

A.B.

Henry Baily, A.M.
 Albert L. Baily
 Francis K. Carey, *LL.B.*, A.M.
 Edward T. Comfort
 Charles S. Crosman, *LL.B.*
 Samuel H. Hill
 Lindley M. H. Reynolds
 Daniel Smiley, Jr.
 Henry L. Taylor, A.M., *M.D.*
 John M. W. Thomas
 George W. White

S.B.

Jonathan Eldridge
 Edward Forsythe
 Cyrus P. Frazier, *A.B.*
 Robert B. Haines, Jr.
 Henry N. Stokes, *Ph.D.*

1879

A.B.

Samuel Bispham, Jr.
 Edward Gibbons
 John H. Gifford, *M.D.*
 Francis Henderson, *LL.B.*
 William C. Lowry
 John B. Newkirk
 John F. Sheppard, Jr., *M.D.*

1880

A.B.

Charles F. Brédé, A.M.
 Charles E. Cox
 Josiah P. Edwards
 James L. Lynch
 Samuel Mason, Jr.
 William F. Perry
 Joseph Rhoads, Jr., A.M.

S.B.

William Bishop
 Alexander P. Corbit
 Charles E. Gause, Jr.
 Edward M. Jones

1881.

A.B.

William A. Blair
 A. Morris Carey
 Levi T. Edwards A.M.
 Edward Y. Hartshorne
 Isaac T. Johnson, A.M.
 Edwin O. Kennard
 Jesse H. Moore
 William E. Page
 Walter F. Price, A.M., *A.M.*
 Thomas N. Winslow
 John C. inston

S.B.

Walter Brinton
 William H. Collins
 Joseph H. Cook
 Davis H. Forsythe
 Albanus L. Smith

1882

A.B.

George A. Barton, A.M., *A.M.*
 Isaac M. Cox
 Richard B. Hazard
 Wilmot R. Jones
 *Wilmer P. Leeds, *1885
 J. Henley Morgan
 Edward Randolph

S.B.

John E. Coffin
 Daniel Corbit
 George L. Crosman
 Frederic D. Jones
 T. Chalkley Palmer
 Lindley M. Winston

1883

A.B.

John Blanchard, *LL.B.*
 Frank E. Briggs
 George H. Evans
 Francis B. Stuart
 Bond V. Thomas
 Thos. K. Worthington, *LL.B.*, *Ph.D.*

S.B.

William L. Baily
 Stephen W. Collins
 D. William Edwards
 William E. Scull
 Samuel B. Shoemaker, *M.D.*
 John D. Spruance
 W. Alpheus White
 Charles H. Whitney
 Louis B. Whitney

1884

A.B.

John Henry Allen, A.M.
 Orren William Bates
 Thomas Herbert Chase
 William J. Haines
 Arthur D. Hall
 Charles R. Jacob
 Alfred Percival Smith, *LL.B.*

S.B.

Louis T. Hill
 Walter L. Moore
 George Vaux, Jr., *LL.B.*

L.B.

Francis A. White

1885
A.B.

Samuel Bettle
Enos L. Doan
William T. Ferris
William S. Hilles
William T. Hussey
Arthur W. Jones, A.M.
Joseph L. Markley, A.M., A.M., Ph.D.
Marriott C. Morris
Augustus T. Murray, Ph.D.
Augustus H. Reeve
William F. Reeve
Isaac Sutton, A.M.
Elias H. White, LL.B.
William F. Wickersham, A.M.

S.B.

Charles W. Baily
John J. Blair
Thomas Newlin
Theodore W. Richards, A.M., Ph.D.
*Matthew T. Wilson, *1891

1886
A.B.

Jonathan Dickinson, Jr.
Alexander H. Scott
Horace E. Smith
Edward D. Wadsworth, LL.B.

S.B.

Thomas W. Betts
Guy R. Johnson
William S. McFarland
*Israel Morris, Jr., *1891
William P. Morris
Alfred M. Underhill, Jr.
Wilfred W. White

1887.
A.B.

Jay Howe Adams, M.D.
Edward B. Cassatt
William H. Futrell
Alfred C. Garrett, A.B., A.M.
Henry H. Goddard, A.M.
Willis H. Hazard
Barker Newhall, A.M.
Jesse E. Phillips, Jr., A.M.
Henry W. Stokes
Frederick H. Strawbridge
Richard J. White
George B. Wood
William C. Wood

S.B.

*Arthur H. Baily, *1889
Charles H. Bedell
Allen B. Clement

Horace Y. Evans, Jr.
Hugh Lesley
*William W. Trimble, *1891.

B.E.

P. Hollingsworth Morris

1888
A.B.

E. Morris Cox
Howell S. England, A.M.
Allison W. Slocum, A.M.
Martin B. Stubbs, A.M.

S.B.

Charles H. Battey
John C. Corbit, Jr.
Morris E. Leeds
William Draper Lewis, LL.B.
Henry V. Gummere, A.M., A.M.
Francis C. Hartshorne, LL.B.
Joseph T. Hilles
George B. Roberts
Joseph W. Sharp

B.E.

Lawrence P. Beidelman
Joseph E. Johnson, Jr., M.E.
Frederick W. Morris, Jr.
Richard J. Morris

1889
A.B.

Robert C. Banes
Thomas F. Branson
Charles H. Burr, Jr., A.M.
Thomas Evans
Warner H. Fite
Warren C. Goodwin
Victor M. Haughton
Franklin B. Kirkbride
Daniel C. Lewis
Lawrence J. Morris
William F. Overman
Frank W. Peirson, A.M.
Samuel Prioleau Ravenel, Jr.
Walter George Reade
Lindley M. Stevens, A.M.
John Stoddell Stokes
*Layton W. Todhunter, *1889
Frederick N. Vail, A.M.
Gilbert C. Wood

S.B.

William R. Dunton, A.M.
Arthur N. Leeds, A.M.
J. Henry Painter
David J. Reinhardt
Frank E. Thompson, A.M.

B.E.

Herbert Morris

1890.

A.B.

Edward M. Angell
 James Stuart Auchincloss
 William G. Audenried, Jr.
 Henry R. Bringhurst, Jr.
 Charles T. Cottrell
 Guy H. Davies
 Robert E. Fox
 Henry L. Gilbert, A.M.
 William G. Jenkins
 Thomas S. Kirkbride
 Jonathan M. Steere

B.E.

John F. Taylor Lewis
 Edward R. Longstreth
 William Percy Simpson
 Ernest Forster Walton

1891

A.B.

Harry Alger
 David H. Blair
 Henry A. Todd.

S.B.

Thomas Amory Coffin
 Percy S. Darlington
 William M. Guilford, Jr.
 John N. Guss
 Edwin J. Haley, A.M.
 Robert R. Tatnall, A.M.
 Dilworth P. Hibberd, A.M.
 Alfred C. Tevis

S.B.

William W. Handy
 Arthur Hoopes
 John Wetherill Hutton
 David L. Mekeel
 John Stokes Morris
 George Thomas, 3d

Whole number of graduates, 477.

The following graduate students have received Advanced Degrees
 not having been undergraduates at Haverford.

1890.

William B. Eaton, A.B., Wesleyan, 1889, A.M.
 Charles L. Michener, A.B., Penn, 1884, A.M.
 Charles E. Pritchard, A.B., Earlham, 1889, A.M.
 William E. Sayrs, A.B., Wilmington, 1889, A.M.
 Charles E. Terrell, S.B., Earlham, 1888, A.M.
 Charles H. Thurber, Ph.B., Cornell, 1886, A.M.
 Robert W. Rogers, A.B., Johns Hopkins, 1887, Ph.D.

1891.

Lawrence M. Byers, A.B., Penn, 1890, A.M.
 William H. Carroll, A.B., Wilmington, 1890, A.M.
 Myron F. Hill, A.B., Harvard, 1890, A.M.
 Lucian M. Robinson, A.B., Harvard, 1882, A.M.

HONONARY DEGREES.

1858	1882.
Hugh D. Vail, A.M.	Henry T. Coates, A.M.
1859	1883
*Joseph W. Aldrich, A.M., *1865	Thomas F. Cock, LL.D.
1860	James Wood, A.M.
John G. Whittier, A.M.	Henry N. Hoxie, A.M.
1864	1884
Edward D. Cope, A.M.	Joseph Parrish, A.M.
1867	Elijah Cook, A.M.
Joseph Moore, A.M.	1885
1872	*Julius L. Tomlinson, A.M. *1890
William Jacobs, A.M.	Robert Howland Chase, A.M.
1875	1886
*Samuel Alsop, Jr., A.M., *1888	Edward H. Magill, LL.D.
1876	1887.
*Pliny E. Chase, LL.D., *1886	Thomas Kimber, LL.D.
William H. Pancoast, A.M.	1888.
1877	Clement L. Smith, LL.D.
John J. Thomas, A.M.	1890
1879	Joseph John Mills, LL.D.
Richard M. Jones, A.M.	1891.
Ellis Yarnall, A.M.	Richard M. Jones, LL.D.
1880	
Thomas Chase, LL.D.	
Thomas Hughes, LL.D.	

THE FACULTY

desires to place a copy of the Annual Catalogue in the hands of every alumnus and member of the corporation. It is requested that all omissions that become known be reported to the Secretary of the College.

Haverford College Studies.

- No. 1.—The Library of the Convent of the Holy Sepulchre at Jerusalem ;
J. Rendel Harris.
Work of Haverford College Observatory ; F. P. Leavenworth.
On the Geometry of a Nodal Circular Cubic ; Frank Morley.
On the Period of Rotation of the Sun ; Henry Crew.
On the Symbolic Use of the Colors Black and White in Germanic Tradition ; Francis B. Gummere.
- No. 2.—The Rest of the Words of Baruch ; J. Rendel Harris.
Some Esarhaddon Inscriptions ; Robert W. Rogers.
- No. 3.—The Passion of Perpetua ; J. Rendel Harris and Seth K. Gifford.
On Some Properties of the Triangle ; Frank Morley.
- No. 4.—On the Numerical Characteristics of a Cubic Curve ; Charlotte Angas Scott.
On the Caustic of the Epicycloid ; Frank Morley.
Sun-Spot Observations ; H. V. Gummere and F. P. Leavenworth.
On a New Manuscript of the Four Gospels ; W. C. Braithwaite.
A Catalogue of Manuscript (chiefly Oriental) in the Library of Haverford College ; Robert W. Rogers.
The Passion of Perpetua ; translated by Seth Gifford.
Specimens of Uncial Lectionaries from Mount Sinai ; J. Rendel Harris.
- No. 5.—The Diatessaron of Tatian, a Preliminary Study ; J. Rendel Harris.
- Nos. 6 and 7.—The Apology of Aristides ; J. Rendel Harris.
- No. 8.—The Codex Bezae ; J. Rendel Harris.
- No. 9.—The Codex Sangallensis ; J. Rendel Harris.
Unpublished Inscriptions of Esarhaddon ; Robert W. Rogers.
- No. 10.—Some Interesting Inscriptions ; J. Rendel Harris.
Stellar Parallax ; F. P. Leavenworth.
Conform-Representation by Means of the p-Function ; Frank Morley.

Price, One Dollar per Number.

Other numbers will appear as material accumulates.

For copies address

The Secretary of Haverford College,
Haverford College P. O., Pa.

HAVERFORD COLLEGE.



1892-93.

CATALOGUE

OF

HAVERFORD COLLEGE.

(HAVERFORD P. O., PA.)

1892-93.



PHILADELPHIA :

PRESS OF FRANKLIN PRINTING COMPANY,

516 MINOR STREET.

CALENDAR.

College Year 1892-93 began	9th Mo. 21
Alumni Prize Orations	12th Mo. 22
Winter Recess begins	12th Mo. 23
Winter Term begins, 1893*	1st Mo. 4
Mid-year Examinations begin	1st Mo. 23
Second Half-year begins	2d Mo. 1
Junior Exercises	4th Mo. 13
Spring Recess begins	4th Mo. 14
Spring Term begins*	4th Mo. 25
Alumni Meeting	6th Mo. 19
Examinations for Admission, 9.30 A. M.	6th Mo. 19
Commencement Day, 1893	6th Mo. 20

VACATION OF THIRTEEN WEEKS

Examinations for Admission, 9.30 A. M.	9th Mo. 19
College Year 1893-94 begins*	9th Mo. 20
Alumni Prize Orations	12th Mo. 22
Winter Recess begins	12th Mo. 23
Winter Term begins 1894*	1st Mo. 4
Second Half-year begins 1894	2d Mo. 1
Junior Exercises	4th Mo. 12
Spring Recess begins	4th Mo. 13
Spring Term begins	4th Mo. 24
Alumni Meeting	6th Mo. 18
Examinations for Admission, 9.30 A. M.	6th Mo. 18
Commencement Day, 1894	6th Mo. 19

*The first recitations are due promptly at *half-past nine o'clock* at the beginning of each term. No absences from them are excused, unless clearly unavoidable.

History and Description.

IN the spring of 1830, a meeting of a few Friends in Philadelphia, shortly followed by a similar meeting in New York, originated Haverford School. The joint committee expressed the object of the effort as follows: "The members of the Society of Friends, having hitherto labored under great disadvantages in obtaining for their children a guarded education in the higher branches of learning, combining the requisite literary instruction with a religious care over the morals and manners of the scholars, . . . and carefully preserving them from the influence of corrupt principles and evil communications, it is therefore proposed that an institution be established in which the children of Friends shall receive a liberal education in ancient and modern literature, and the mathematical and other sciences."

The \$40,000 supposed to be necessary was raised without great effort, and the committee went out to seek a location. They say: "We wished to procure a farm in a neighborhood of unquestioned salubrity—within a short distance of a Friends' meeting—of easy access from this city at all seasons of the year, . . . and that was recommended by the beauty of the scenery and retired situation." Then they go on to say that of the many places presented to them the only one which combined all the advantages was one of 198½ acres (since increased to 215), "near the eight-mile stone on the Lancaster Turnpike." They explain the present and prospective merits of the farm, the beauty of the natural woods, the unfailing springs of purest water, the nearness to the new Pennsylvania Railroad, in words which the succeeding half-century has amply justified.

On the 28th of Tenth month, 1833, the school opened with 21 students. Provision had been made for three teachers and a superintendent.

"A Teacher of Ancient Languages and Ancient Literature.

"A Teacher of English Literature, and of Mental and Moral Philosophy.

"A Teacher of Mathematics and Natural Science."

The Superintendent was to have charge of the order and domestic economy of the family.

The regulations of the new school were rigid. The bounds and time of the boys were very strictly marked out. All the details of the daily programme were arranged with great care; and if the elaborate provision of a number of wise men for the normal growth of students could convert boys into perfect men, the students of Haverford of fifty years ago had every advantage.

The High School thus established grew rapidly into prosperity and debt. The charges were low, the teachers were liberally paid, and the years which followed were marked by a constant endeavor to produce a maximum of good fruits from very limited funds. The deficiencies were made up in a liberal spirit, and a constant growth maintained by frequent subscriptions. All the time the school was justifying the effort by the quality of its results, and making for itself an increasing number of friends.

One of the first acts of the committee, after the absolute necessities of the school were provided for, was to construct a gymnasium, and make arrangements for systematical physical work. They were determined that the advantage gained by the salubrity of the surroundings should not be lost for want of exercise. Under their care the lawn was graded at great expense, and foreign and native trees set out, with the design to make it a great arboretum. Cricket was introduced, a game not known elsewhere in America, and has flourished since. A greenhouse and flower-garden were established and maintained for twenty years by the work of the boys. The ideas that have done harm elsewhere, that schools were places for mental development only, had no foothold here, but morals, muscles, and senses received their due share of culture.

In 1845 a temporary suspension was decreed, to allow the funds to accumulate and give time for the collection of an endowment, which suspension lasted for three years. In 1852 the observatory was built, and supplied with an 8-inch equatorial and 4-inch transit

In 1856 the school was changed to a college, and authorized by the Legislature to grant degrees, but previous to this time the course had been as extended as in many colleges. It was still hampered with a large preparatory department, which was not abolished till 1861. In 1863 the Alumni Hall and Library were built. In 1876-7 Barclay Hall, containing private dormitories and study-rooms, was erected, at a cost of \$82,000, which was collected by subscription. The Chemical Laboratories were perfected in 1878. The new Observatory was built in 1883, the Mechanical Laboratory established in 1884, and a new building erected in 1890; the Biological Laboratory was established in 1886, and the Physical Laboratory in 1888. Chase Hall, for lecture and recitation-rooms, was built in 1888.

During this time Haverford had developed into a fully-organized college. Many rules, adapted to boys of a boarding-school age, had been modified or abandoned, though enough of restraint was retained to provide against demoralization. The standard of admission was raised. Students of any denomination were admitted, though Friends still retained the general control. The number of teachers was increased five-fold. By various donations and bequests the endowment fund was enlarged. The annual charge was increased from \$200 to \$500,* which still fails to represent what the college has to pay for professor's salaries and board and care of students. Retaining the old idea of a "guarded education" and "a religious care over morals and manners," the college has sought to effect these results, and has measurably succeeded, rather by appeals to Christian principle and manliness than by arbitrary power.

In Barclay Hall, the hall of residence, two students occupy a study-room, and each has his private, adjoining bed-room. A few single rooms are also provided. Recitation-rooms, laboratories, and dining-room are in Founders' Hall. The Library and Observatory are in separate buildings near by. Some of the professors live in the halls with the students, and others have cottages on the grounds.

*The price may vary, depending on the situation of the room, from \$375 to \$525. Most of the rooms involve a payment of \$500.

The college has a remarkably pleasant and healthful location in the township of Haverford, Delaware County,* Pa., nine miles west of Philadelphia, on the Pennsylvania Railroad. The buildings are surrounded by grounds of about sixty acres, tastefully laid out, and adorned with well-kept lawns, and a great variety of trees and shrubbery. These grounds comprise excellent fields for cricket, base-ball, foot-ball, tennis, and other field games, a running and bicycle track, and a pond for skating.

The courses of study are designed to give a liberal education. Their scope will be seen on the following pages. Religious instruction is carefully provided. In addition to the daily reading of the Holy Scriptures, recitations in the English or Greek New Testament or in Scripture History are required of the student once a week. By exposition and collateral information the instructors endeavor to enforce the true meaning of the lessons. Haverford College desires to inculcate the simple truths of the Christian religion.

* Haverford *Post-Office* is in Montgomery County.

Corporation.

President,

T. WISTAR BROWN,
233 Chestnut Street, Philadelphia.

Secretary.

GEORGE VAUX, JR.,
Girard Building, Philadelphia.

Treasurer,

ASA S. WING,
409 Chestnut Street, Philadelphia.

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Secretary of the Board,

HOWARD COMFORT,
529 Arch Street, Philadelphia.

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RICHARD WOOD.

Faculty.*

ISAAC SHARPLESS, Sc. D., LL. D., PRESIDENT,
and Professor of Ethics.

ALLEN C. THOMAS, A. M., LIBRARIAN,
and Professor of History and Political Science.

LYMAN BEECHER HALL, Ph. D.,
John Farnum Professor of Chemistry.

SETH K. GIFFORD, A. M.,
Professor of Greek.

MYRON REED SANFORD, A. M., DEAN,
and Professor of Latin.

LEVI T. EDWARDS, A. M.,
Professor of Mechanical Engineering.

WILLIAM COFFIN LADD, A. M.,
Professor of French.

FRANCIS B. GUMMERE, Ph. D.,
Professor of English and German.

FRANK MORLEY, A. M.,
Professor of Pure Mathematics.

WINFIELD SCOTT HALL, M. S., M. D.,
Instructor in Biology (David Scull Foundation).
Medical Examiner.

*Arranged primarily as Professors, Instructors, etc.; secondarily in the order of appointment.

ERNEST WILLIAM BROWN, A. M.,

Instructor in Applied Mathematics.

JOSEPH OSGOOD THOMPSON, PH. D.,

Instructor in Physics.

WILLIAM H. COLLINS, A. M.,

Director of the Observatory.

ARTHUR L. BRAINERD, A. B.,

Instructor in Latin and German.

GEORGE A. BARTON, PH. D.,

Instructor in Bible Languages.

ALDEN SAMPSON, A. M.,

Non-resident Lecturer on Fine Arts.

WILLIAM DRAPER LEWIS, PH. D.,

Instructor in Political Science.

BENJAMIN CADBURY, A. B.,

Assistant in the Library.

CHARLES GILPIN COOK, S. B.,

Assistant in the Chemical Laboratory.

EUGENE C. LEWIS,

Secretary of the College.

Graduate Students.

CADBURY, BENJAMIN, A. B. (Haverford, 1892),
Philadelphia, Pa.
Major Subject—English.

COOK, CHARLES GILPIN, S. B. (Haverford, 1892),
Glenville, Md.
Major Subject—Chemistry.

HART, WALTER MORRIS, A. B. (Haverford, 1892),
Philadelphia, Pa.
Major Subject—English.

HASTINGS, WILLIAM W., A. B. and A. M. (Maryville, 1886 and 1892),
Graduate Union Theological Seminary, 1891.
Staten Island, N. Y.
Major Subject—Semitic Languages.

HUNT, WILSON ALLEN, S. B. (Wilmington, 1892),
Bloomington, Ohio.
Wilmington Fellow.
Major Subject—Chemistry.

JOHNSON, IRVING CULVER, A. B. (Penna., 1892),
Oskaloosa, Iowa.
Penn Fellow.
Major Subject—U. S. History.

VAN NOPPEN, LEONARD CHARLES, A. B. (Guilford, 1890),
B.L. (University of N. C. 1892),
Durham, N. C.
Major Subject—English.

YARNALL, STANLEY RHOADS, A. B. (Haverford, 1892),
Media, Pa.
Haverford Fellow.
Major Subject—Classics.

Earlham Fellow.

SENIOR CLASS.

Bailey, Leslie Adelbert,	<i>Dresden, Me.,</i>	Arts and Science.
Brown, John Farnum,	<i>Villa Nova, Pa.,</i>	Arts and Science.
Davis, Francis F.,	<i>Lansdowne, Pa.,</i>	Scientific.
Estes, Wilbur Albert,	<i>Sprague's Mills, Me.,</i>	Arts and Science.
Haviland, Walter Winchip,	<i>Glens Falls, N. Y.,</i>	Arts and Science.
Hoag, Clarence Gilbert,	<i>Roxbury, Mass.,</i>	Arts and Science.
Jacobs, Carrol Brinton,	<i>West Chester, Pa.,</i>	Arts and Science.
Jones, George Lindley,	<i>Union Springs, N. Y.,</i>	Arts and Science.
Morton, Arthur Villiers,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Okie, John Mickle,	<i>Berwyn, Pa.,</i>	Scientific.
Osborne, Charles,	<i>North Weare, N. H.,</i>	Arts and Science.
Rhoads, Charles James,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Rhoads, Edward,	<i>Germantown, Pa.,</i>	Scientific.
Roberts, John,	<i>Downingtown, Pa.,</i>	Mechanical Eng.
Sensenig, Barton,	<i>Goodville, Pa.,</i>	Scientific.
Vaux, William Sansom, Jr.,	<i>Bryn Mawr, Pa.,</i>	Mechanical Eng.
Wescott, Eugene M.,	<i>Shawano, Wis.,</i>	Arts and Science.
Whitall, Franklin,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Wright, Gifford King,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Woolman, Edward,	<i>Philadelphia, Pa.,</i>	Scientific.

JUNIOR CLASS.

Beyerle, George Albert,	<i>Bernville, Pa.,</i>	Arts and Science.
Chase, Oscar Marshall,	<i>Hazleton, Pa.,</i>	Mechanical Eng.
Collins, Charles,	<i>Purchase, N. Y.,</i>	Arts and Science.
Comfort, William Wistar,	<i>Germantown, Pa.,</i>	Arts and Science.
Conard, Henry Shoemaker,	<i>Lansdowne, Pa.,</i>	Scientific.
De Cou, John Allen,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Farr, Clifford Bailey,	<i>Wenonah, N. J.,</i>	Arts and Science
Greene, Kane Stovell,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Harvey, Anson Burlingame,	<i>Pittsburgh, Pa.,</i>	Scientific.
Morris, Samuel Wheeler,	<i>Philadelphia, Pa.,</i>	Scientific.
Quimby, Edward Entwisle,	<i>Philadelphia, Pa.,</i>	Scientific.
Rex, Frank Clayton,	<i>Pottstown, Pa.,</i>	Arts and Science.
Ristine, Frederick Pearce,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Scarborough, Henry Wismer,	<i>Carversville, Pa.,</i>	Scientific.
Stokes, Francis Joseph,	<i>Germantown, Pa.,</i>	Arts and Science.
Strawbridge, William Justus,	<i>Germantown, Pa.,</i>	Mechanical Eng.
Taber, David Shearman, Jr.,	<i>New York, N. Y.,</i>	Arts and Science.
Williams, Parker Shortridge,	<i>Wynnewood, Pa.,</i>	Arts and Science.

Gardner, Larner Somers,	<i>Atlantic City, N. J.,</i>	Scientific.
Lewis, Eugene C.,	<i>West Chester, Pa.</i>	
Miller, Martin Nixon,	<i>Wissahickon Heights, Pa.</i>	
Shoemaker, Benj. Hallowell, Jr.,	<i>Germantown, Pa.</i>	
Warden, Nelson Bushnell,	<i>Philadelphia, Pa.</i>	

SOPHOMORE CLASS.

Bettle, Samuel,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Blanchard, Edmund, Jr.,	<i>Bellefonte, Pa.,</i>	Arts and Science.
Conklin, Frank Henry,	<i>Brooklyn, N. Y.,</i>	Arts and Science.
Cookman, Charles Howland,	<i>Wilmington, Del.,</i>	Arts and Science.
Dean, George Brookhouse,	<i>Cincinnati, O.,</i>	Scientific.
Engle, James Linton,	<i>Haddonfield, N. J.,</i>	Arts and Science.
Evans, Joseph Spragg, Jr.,	<i>West Chester, Pa.,</i>	Arts and Science.
Goodman, William,	<i>Cincinnati, O.,</i>	Mechanical Eng.
Hay, Arthur Moorhead,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Hay, Erroll Baldwin,	<i>Philadelphia, Pa.,</i>	Scientific.
Hilles, William Smedley,	<i>Frankford, Pa.,</i>	Scientific.
Lippincott, George,	<i>Wyncote, Pa.,</i>	Arts and Science.
Male, Jonathan Tamblyn,	<i>Beech Pond, Pa.,</i>	Arts and Science.
Morris, Alfred Paul,	<i>Pottstown, Pa.,</i>	Mechanical Eng.
Palmer, Louis Jaquette,	<i>West Chester, Pa.,</i>	Arts and Science.
Taylor, Charles Clifford,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Thomas, Allen Curry,	<i>Philadelphia, Pa.,</i>	Scientific.
Thomas, Henry Evan,	<i>Philadelphia, Pa.,</i>	Scientific.
Webster, Walter Coates,	<i>West Grove, Pa.,</i>	Scientific.
Wood, Grahame,	<i>Philadelphia, Pa.,</i>	Scientific.

Supplee, William Wagner,	<i>Gulf Mills, Pa.</i>
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FRESHMAN CLASS.

Adams, Douglas Howe,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Bettle, William Henry,	<i>Camden, N. J.,</i>	Mechanical Eng.
Brinton, Howard Futhey,	<i>West Chester, Pa.,</i>	Arts and Science.
Brooke, Mark,	<i>Fort Leavenworth, Kan.,</i>	Scientific.
Coca, Arthur Fernandez,	<i>Wayne, Pa.,</i>	Arts and Science.
Field, Thomas Yardley, Jr.,	<i>Wayne, Pa.,</i>	Scientific.
Harris, Henry John,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Huey, Robert, Jr.,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Hunsicker, John Quincy, Jr.,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Lester, John Ashby,	<i>Westport, Mo.,</i>	Arts and Science.
Maier, Paul D. I.,	<i>Philadelphia, Pa.,</i>	Arts and Science
Middleton, Samuel,	<i>Wilmington, Del.,</i>	Mechanical Eng.
* Roberts, Thomas Batten,	<i>Whitford, Pa.,</i>	Mechanical Eng.
Scattergood, Joseph Henry,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Webster, Homer J.,	<i>Quaker City, O.,</i>	Scientific.
Wood, L. Hollingsworth,	<i>Mt. Kisco, N. Y.,</i>	Arts and Science.

Alsop, William Kite,	<i>Haverford, Pa.</i>	
Clauser, Milton,	<i>Haverford, Pa.</i>	
Okie, Richardson Brognard,	<i>Berwyn, Pa.,</i>	
Olver, Cyrus Hicks,	<i>Beech Pond, Pa.</i>	

* Deceased 11th mo. 25th, 1892.

SUMMARY.

Graduate Students,	8
Seniors,	20
Juniors,	23
Sophomores,	21
Freshmen,	20
	<hr/>
	92

Admission.

CANDIDATES for admission to the Freshman Class in the COURSE IN ARTS AND SCIENCE will be examined as to their proficiency in the following requisites :

GREEK.—Grammar, scanning of hexameter verse : Xenophon's *Anabasis*, four books ; Homer's *Iliad*, three books ; sight reading from Xenophon and Homer ; Jones's *Greek Composition*, twenty-five Exercises to be written with the accents.

LATIN.—Cæsar's *Gallic War* four books ; Vergil's *Æneid*, six books ; Cicero, six orations. Sight reading from Cicero, Cæsar, and Nepos. General questions on grammar, prosody, history, and mythology suggested by the text. Translation of easy prose from English into Latin. Harkness, Parts I. and II., or Jones's Exercises will indicate the amount necessary.

NOTE.—Equivalents in Greek and Latin will be accepted. Much importance is attached to ability to read at sight matter not previously studied.

MATHEMATICS.—Arithmetic, including the Metric System ; Algebra, through Radicals and Quadratic Equations ; Plane Geometry.

ENGLISH.—Grammar ; a short English Composition, correct in spelling, punctuation, and expression. The subject will be drawn in 1893 from Macaulay's *Warren Hastings* ; Irving's *Bracebridge Hall* ; Tennyson's *Elaine* ; in 1894 from Macaulay's two *Essays on Dr. Johnson*, Scott's *Lady of the Lake*, and Thackeray's *English Humorists* ; and in 1895 from Longfellow's *Evangeline* ; Carlyle's *Essay on Sir Walter Scott*, and Thackeray's *Four Georges*.

NOTE.—Other work of equal merit and extent will be accepted as equivalent.

HISTORY.—Greek, Roman, and United States History.

MODERN LANGUAGES.—In place of the Greek the candidate may offer *both* German and French as follows :

German.—A thorough knowledge of the Grammar, ability to read at sight ordinary prose or poetry, and to translate English sentences into German. The minimum amount to be read may be indicated by Whitney's *German Reader*, or Boisen's *German Prose*, Schiller's *Wilhelm Tell*, and a connected piece of prose like Storm's *Immensee* or Eichendorff's *Aus dem Leben eines Taugenichts*.

French.—A thorough knowledge of the Grammar: ability to read at sight ordinary prose or poetry, and to translate English sentences into French. The minimum amount to be read may be indicated by Super's *French Reader* (50 pages), Knapp's *French Readings* (118 pages), *Mlle. de la Seiglière*, *Esther*.

NOTE.—Equivalents in German and French will be accepted.

Candidates for admission to the Freshman Class in the SCIENTIFIC or ENGINEERING COURSE will be examined as follows:

LATIN.—As above.

MATHEMATICS.—As above, with the addition of the Properties and the Use of Logarithms.

ENGLISH.—As above.

HISTORY.—As above.

SCIENCE.—The elements of Physics, and Martin's *Human Body*, *Briefer course*, or an equivalent.

MODERN LANGUAGES.—Both German and French, as outlined above may be substituted for the Latin of this course. This is advised in the Engineering Course.

The certificates of principals of first-class schools will, at the discretion of the President, be accepted in place of entrance examinations, so far as they cover the ground. Blank forms will be furnished on application. Certificates of private tutors will not be accepted.

Students not candidates for a degree may, at the discretion of the Faculty, be admitted to pursue special courses, for proficiency in which certificates may be granted; but this permission will be given only to students of sufficient age, ability, and diligence to insure their success.

Candidates may be admitted to advanced Classes if found on examination thoroughly fitted in all the regular studies of the Course up to the point at which they enter.

Each candidate must forward, together with his application, a certificate of good moral character from his last teacher; and students from other colleges must present certificates of honorable dismissal in good standing.

APPLICATIONS FOR ADMISSION must be made to the President. Entry blanks will be furnished on application. Rooms are assigned to old students in the order of seniority, and to new students in the order in which these entry blanks, properly filled up, are received at the President's office. Candidates will present themselves at Founders' Hall, for examination by the Faculty, *at 9.30 o'clock on the morning previous to Commencement Day, or at 9.30 o'clock on the morning previous to the beginning of the College Year.*

Expenses.

WITH the exceptions noted in the two following paragraphs, the price of Board and Tuition for undergraduates in the College Halls (together with fuel, lights, furniture,* and service is five hundred dollars (\$500) a year.

There are a few large rooms in Barclay Hall, each of which may be taken by one student at an increased cost of twenty-five dollars a year, or by two at a decreased cost to each of seventy-five dollars a year.

A few students will be taken in Woodside Cottage. The charge will be \$375 for Board and Tuition.

The charge for Tuition is one hundred and fifty dollars (\$150) a year; for Tuition and mid-day meal, two hundred dollars (\$200) a year.

The College Laundry makes a reasonable charge for washing.

Students furnish their own books and stationery, and are charged for materials consumed and breakage in the Laboratories.

The charge for Board and Tuition for Graduate Students is three hundred dollars (\$300); for Tuition alone, one hundred dollars (\$100).

Bills for Board and Tuition are payable one-half at the beginning and one-half at the middle of the College Year.

* Students furnish their own towels and napkins. It will also be found convenient in many cases to supply their own study-room furniture.

Scholarships.

A FEW scholarships, varying in amount from \$100 to \$500, are at the disposal of the College.

These will be granted to properly qualified students who cannot afford to pay the full charges. In awarding the scholarships, both character and intellectual preparation are taken into account. Students should send, with their application, certificates of moral character. The intellectual preparation is tested by examination. Blank forms on which the application must be written will be furnished by the President of the College. Candidates are advised to apply at an early date.

Fellowships.

THE College has received a sum of money for the purpose of establishing four Graduate Fellowships, of the annual value of \$300 each—the whole charge for Board and Tuition. By the conditions of the donors, one of these will be given to a graduate of each of the following Colleges, viz. : Haverford, Earlham, Penn, and Wilmington; *Provided*, that the student shall be recommended by the President of the College at which he graduated as likely to profit by the instruction given at Haverford, and that he shall be satisfactory to the Faculty of Haverford College.

Should there not be satisfactory applications for these fellowships by Fourth month 1st, they may be otherwise disposed of.

Courses of Instruction.

IN the Course in Arts and Science, Latin and Mathematics are required through two years. Should the student present Greek for admission, he is required to continue it for two years, and take German and French for one year. Should he present German and French for admission, he is required to continue them for two years. All these subjects may be continued as electives. Some election is allowed in the Junior year. The Senior year is largely elective.

In the Scientific Course, Latin is required one year (unless the student presents German and French for admission), and Mathematics two years. Particular attention is given to the Modern Languages and the Sciences throughout the course. Electives may be taken as in the course in Arts and Science.

In the Mechanical Engineering Course, the Freshman year is nearly the same as in the Scientific Course. After this there is divergence, the Engineering student taking more Mathematics, Mechanics, Shop Work, and Drawing as required studies.

Scripture and Themes are required of all undergraduate students.

In the Elective Courses in the two upper years, which are taken with the advice and consent of the Faculty, students are expected to select studies having some relation to each other. In many cases it is desirable to concentrate the work in one department. The "Honor System" (see page 36) will, it is hoped, promote this object.

Course in Arts and Science.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.
 2. *Mathematics*. Sharpless's *Geometry*; Hall and Knight's *Higher Algebra*; Oliver, Wait, and Jones's *Trigonometry*. Four hours a week.
 3. *Greek*. (See note below.) Lysias, *Select Orations*; Herodotus, *Selections*; Homer, *Selections*; Translation at sight; Greek Composition. Four hours a week.
 4. *Latin*. Livy; The Odes and Epodes of Horace; Review of Latin Grammar; Translation at sight (Cicero, *De Senectute* and *De Amicitia*); Prose Composition. Four hours a week.
 5. *Rhetoric and English Composition*. *Principles of Rhetoric* (A. S. Hill); Reading in English Prose; Composition (exercises in the class-room). Themes. Two hours a week.
 6. *Biology*. Martin's *Human Body*; Descriptive Botany with Plant Analysis. Two hours a week.
- Laboratory courses in *Physiology* and *Botany* may be pursued by those who have covered the ground indicated.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission will take elective studies in German or French.

SOPHOMORE CLASS.

1. *Scripture*. The Greek Testament, Luke's Gospel. One hour a week.
2. *Mathematics*. Smith's *Analytical Geometry*; Introductory *Calculus*; *Surveying*, with Field Practice. Three hours a week.
3. *Greek*. (See note below.) Plato *Apology* and *Crito*, or *Phaedo*; Æschylus, *Prometheus*; Aristophanes, *Frogs*; Lectures; Translation at sight (Xenophon, *Memorabilia*); Dictation Exercises in writing Greek. Three hours a week.
4. *Latin*. The *Germania* and *Agricola* of Tacitus; Selections from the Latin Poets; Cicero's *Letters*; Translations at sight (Cornelius Nepos); Prose Composition. Three hours a week.
5. *History*. Outlines of Ancient History; Mediæval History (Text-Book and Lectures). Two hours a week.

6. *Physics*. Stewart's *Lessons*, with Experimental Lectures, three hours a week, and Laboratory Work, two and one-half hours a week, the first half-year.

7. *Chemistry*. Elementary General Chemistry, three hours a week, and Laboratory Work, two and one-half hours a week, the second half-year.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission to the Freshman Class will take elective courses in German and French.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. One hour a week.

2. *German*. (For those who have not studied the language.) Joynes-Meissner's *Grammar*; Niebuhr's *Heroengeschichten*; Boisen's *Prose Extracts*; Translations at sight; Exercises in translating English into German. Four hours a week the second half-year.

3. *French*. (For those who have not studied the language.) Whitney's *Grammar*, Part I; Knapp's *French Readings*; Composition (Whitney's *Grammar*, Part II). Four hours a week the first half-year.

4. *Political Science*. Political Economy; Principles of Constitutional Law (Text-Book and Lectures). Two hours a week.

5. *Philosophy*. Logic and Psychology. Two hours a week.

6. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 27-30 enough to make 15 hours per week with their required studies. One course of Latin, Greek, or Mathematics must be taken.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. One hour a week.

2. *Ethics*. Two hours a week.

3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 27-30 enough to make 15 hours per week with their required studies.

Scientific Course.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.

2. *Mathematics*. Sharpless's *Geometry*; Hall and Knight's *Higher Algebra*; Oliver, Wait, and Jones's *Trigonometry*; Greaves' *Statics*; Loney's *Dynamics*. Six hours a week.

3. *Latin*. Livy; The Odes and Epodes of Horace; Review of Latin Grammar; Translations at sight (Cicero, *De Senectute* and *De Amicitia*); Prose Composition. Four hours a week.

NOTE.—Students presenting for admission Modern Languages in place of Latin will take advanced work in German and French instead of the Latin mentioned above.

4. *Rhetoric and English Composition*. *Principles of Rhetoric* (A. S. Hill); Readings in English Prose; Composition (exercises in the class-room); Themes. Two hours a week.

5. *Biology*. General Biology. Plant Dissection. One recitation and one afternoon in the Laboratory each week.

6. *Drawing*. Five hours a week.

SOPHOMORE CLASS.

1. *Scripture*. Luke's Gospel. One hour a week.

2. *Mathematics*. Smith's *Analytical Geometry*; Introductory *Calculus*; *Surveying*, with Field Practice. Three hours a week.

3. *German*. Joynes-Meissner's *Grammar*; Niebuhr's *Heroengeschichten*; Boisen's *Prose Extracts*; Translation at sight; Exercises in translating English into German. Three hours a week.

4. *French*. Whitney's *Grammar*, Part I; Knapp's *French Readings*; Composition; Translations at sight. Three hours a week.

NOTE.—Students presenting for admission Modern Languages in place of Latin will take advanced work in German and French instead of that outlined above.

5. *History*. Outlines of Ancient History; Mediæval History. (Text-book and Lectures.) Two hours a week.

6. *Physics*. Stewart's *Lessons*, with Experimental Lectures, three hours a week, and Laboratory work, two and one-half hours a week the first half-year.

7. *Chemistry*. Elementary General Chemistry, three hours a week, and Laboratory Work, two and one-half hours a week the second half-year.

8. *Biology*. Invertebrate and Vertebrate Morphology; Lectures and Laboratory Work. One recitation and one half-day in the Laboratory each week.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Teachings of Christ. One hour a week.
2. *German*. Lessing's *Minna Von Barnhelm*; Eichendorff's *Aus dem Leben eines Taugenichts*; Goethe's *Iphigenie*; Exercises in German Composition (based on Whitney's *German Grammar*). Three hours a week.
3. *French*. *Mlle. de la Seiglière*; Crane's *Tableaux de la Révolution Française*; *Athalie*; Composition; Lectures on the Language and Literature; Private Reading. (Examinations will be held upon some of the books suggested.) Three hours a week.

NOTE.—Students who have had two years in French and German may take studies from the elective list in their place.

4. *Political Science*. Political Economy; Principles of Constitutional Law. (Text-book and Lectures.) Two hours a week.
5. *Philosophy*. Logic and Psychology. Two hours a week.

ELECTIVE STUDIES.

(Two to be selected.)

1. *Pure Mathematics*. Smith's *Analytical Geometry of Three Dimensions*; Calculus. Three hours a week.
2. *Applied Mathematics*. Introduction to *Analytical Mechanics*, including Attraction and Potential. Three hours a week.
3. *Chemistry*. General and *Analytical Chemistry*; Lectures and Laboratory Work. Three hours a week.
4. *Physics*. Heat or Electricity; Experimental Lectures. Three hours a week.
5. *Biology*. Histology and Embryology. Three hours a week.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scriptures*. Life and Teachings of Christ. One hour a week.
2. *Ethics*. Two hours a week.
3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 27-30 enough to make 15 hours per week with their required studies.

Mechanical Engineering Course.

FRESHMAN YEAR.

Mathematics, 6 hours.
 Shop Work and Drawing, 4 afternoons.
 French or German, 3 hours.
 English, 2 “

JUNIOR YEAR.

Mathematics, 3 hours.
 Shop Work and Drawing, 4 afternoons.
 Materials of Engineering, 2 hours.
 Chemistry, $\left\{ \begin{array}{l} 2 \text{ hours or} \\ \text{equivalent.} \end{array} \right.$
 Descriptive Geometry, etc., 2 hours.
 Electives, 2 “

SOPHOMORE YEAR.

Mathematics, 3 hours.
 Shop Work and Drawing, 4 afternoons.
 Physics and Chemistry, . . 4 hours.
 French or German, 3 “
 Theory of Engineering, . . 1 “

SENIOR YEAR.

Ethics, 2 hours.
 Mechanics and Thermo-
 dynamics, 3 “
 Mechanical Laboratory, . . 4 afternoons.
 Theory of Steam Engine
 Machine Design, 4 hours.
 Electives, 2 “

Electrical students may substitute for the Mechanical Work of the last two years a course in Theoretical and Practical Electricity.

Scripture and Themes are required throughout.

Course Preparatory to the Study of Medicine.

Any regular student anticipating the study of medicine may make this course a part of his four years, leading to the degree of A. B. or S. B.

All students, regular or special, who have satisfactorily completed the course will receive a certificate to that effect.

FIRST YEAR.

First Half-Year.

General Biology, $3\frac{1}{2}$ hours.
 Physiology, 5 “
 Invertebrate Biology, . . . $3\frac{1}{2}$ “
 Drawing, 3 “
 Mathematics, 6 “
 Latin, or German and
 French, 5 “

Second Half-Year.

Botany, 6 hours.
 Vertebrates, 5 “
 Chemistry, 6 “
 Mathematics, 7 “
 Latin, or German and French, 5 “

SECOND YEAR.

<i>First Half-Year.</i>		<i>Second Half-Year.</i>	
Histology,	5 hours.	Embryology,	5 hours.
Mammalian Anatomy, . . .	5 "	Osteology,	5 "
Chemistry,	7½ "	Chemistry,	7½ "
Physics,	5½ "	Physics,	7½ "
Geology,	2 "	Logic,	2 "
Psychology,	2 "	English or History,	2 "
English,	2 "		

Scripture and Themes are required throughout.

Elective Courses.

Seniors and Juniors will elect from the following list, with the approbation of the Faculty, sufficient to make up the required number of hours.

HEBREW.

Grammar. Old Testament. Reading. [Prof. 3.]*

GREEK.

I. History of Greek Literature. Lectures; Selections for Reading.

[Prof. Gifford. 3.]

II. Selections from the Greek Orators; Æschylus; Pindar; Lectures on Greek Art and Antiquities.

[Prof. Gifford. 3.]

III. Sophocles; Euripides; Thucydides; Dictation exercises in writing Greek.

[Prof. Gifford. 3.]

Courses I and II are given in alternate years.

LATIN.

I. Horace, *Ars Poetica*; Juvenal, *Thirteen Satires*; Suetonius, *Divus Julius* and *Divus Augustus*; Tacitus, Selections from *Annals* and *History*; Plautus, *Captivi*; *Trinummus*; Cicero, Selections from Philosophical Works.

[Prof. Sanford. 3.]

II. Readings from the following authors will occupy two hours each week during the College year: Pliny, *Letters*; Vergil, *Bucolics*; Terence, *Adelphi*; Lucretius, Catullus, Tibullus, Propertius, Ovid, Lucan.

*These figures represent the number of hours per week. In Laboratory Work, etc., two and a half hours count as one.

One hour each week during the year will be occupied as follows: During the first half, Lectures and Examination of the Topography of Italy, and particularly on the Topography, Buildings, Statuary, etc., of Ancient Rome. During the second half of the year, an outline of Roman Literature.

[Prof. Sanford. 3]

ENGLISH.

I. ANGLO-SAXON.—Sweet, *Anglo-Saxon Reader*; Cynewulf's *Elene*; Lectures. [Prof. Gummere. 2.]

II. ENGLISH LITERATURE IN THE FOURTEENTH CENTURY.—Chaucer's *Canterbury Tales*. Lectures. [Prof. Gummere. 1.]

III. SHAKSPERE.—*Lear, Hamlet, Tempest, As You Like It*; Lectures on Elizabethan Poetry. [Prof. Gummere. 2.]

IV. ADVANCED ENGLISH COMPOSITION.—Exercises in Composition; Discussion of special work; Readings in English Prose. [Prof. Gummere. 1.]

Only those who have attained good rank in themes for the Freshman and Sophomore Years will be admitted to this class. Members of it will be exempted from regular theme work.

V. ENGLISH LITERATURE OF THE EIGHTEENTH AND NINETEENTH CENTURIES.—Selections from Representative Authors; Lectures; Private Readings.

[Prof. Gummere. 2.]

Course III will be omitted in 1893-94.

GERMAN.

I. MIDDLE-HIGH-GERMAN.—Paul, *Mittelhochdeutsche Grammatik*. Selections from the Poems of Walther von der Vogelweide. *Das Niebelungenlied*.

[Prof. Gummere. 2.]

II. GOETHE AND SCHILLER.—*Faust*; *Wallenstein*; Selected Poems; History of German Literature; Exercises in German Composition.

[Prof. Gummere. 3.]

III. Lessing's *Minna von Barnhelm*; Selections from German Prose; Exercises in German Composition.

[Prof. Gummere. 3.]

FRENCH.

I. Course in Molière; Darmesteter and Hatzfeld's *Le Seizième Siècle en France*; Lectures; Themes in French; Private Reading. [Prof. Ladd. 2.]

II. Daudet's *Contes*; Blouët's *L'Eloquence de la Chaire Française*; Corneille's *Le Cid*; Racine's *Phèdre*; Crane's *Le Romantisme Française*; Hugo's *Hernani*; Exercises in Composition and Idioms; Lectures on the Language and Literature; Private Reading. [Prof. Ladd. 3.]

III. *Mlle. de la Seiglière*; Crane's *Tableaux de la Révolution Française*; *Athalie*; Composition; Lectures on the Language and Literature; Private Reading. [Prof. Ladd. 3.]

IV. Classical Juniors may continue the study of French the second half-year. The work will be similar to III. [Prof. Ladd. 2.]

PURE MATHEMATICS.

- | | |
|---|--------------------|
| I. Analytical Geometry of three Dimensions (Smith.) | Calculus. |
| | [Prof. Morley. 3.] |
| II. Introduction to the Theory of Functions. | [Prof. Morley. 3.] |
| III. Modern Geometrical Methods. | [Prof. Morley. 3.] |

APPLIED MATHEMATICS.

- | | | |
|------|---|-------------------|
| I. | Introduction to Analytical Mechanics, including Attraction and Potential. | [Prof. Brown. 3.] |
| II. | Differential Equations (Forsyth), | [Prof. Brown. 3.] |
| III. | Elementary Rigid Dynamics (Routh). | [Prof. Brown. 3.] |

HISTORY AND POLITICAL SCIENCE.

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|---|--------------------|
| I. Mediaeval and Modern European History. | [Prof. Thomas. 2.] |
| This course will not be given in 1892-93. | |
| II. Political and Constitutional History of England from the Anglo-Saxon Conquest to the Restoration. | [Prof. Thomas. 3.] |
| III. Political and Constitutional History of England from the Restoration to the present time. | [Prof. Thomas. 3.] |
| Courses II and III are intended to be given in alternate years. | |
| IV. American Colonial History to 1783; Europe and America during the Eighteenth Century. | [Prof. Thomas. 3.] |
| V. Constitutional and Political History of the United States, 1783 to 1865. | [Prof. Thomas. 3.] |
| Courses IV and V are intended to be given in alternate years. | |
| VI. Theory of the State. | [Prof. Thomas. 3.] |
| VII. History of Political Economy. Selected topics for investigation. | [Prof. Thomas. 3.] |
| Courses VI and VII are intended to be given in alternate years. | |

ASTRONOMY.

- | | | |
|--|-------------------|-----|
| I. Practical Astronomy, with Observatory Practice. | [Prof. Collins. | 2.] |
| II. Descriptive Astronomy. (Half-year.) | [Pres. Sharpless. | 2.] |

CHEMISTRY.

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|------|--|--------------------|-------------|
| I. | General Chemistry ; Lectures and Laboratory Work. | [Prof. L. B. Hall. | 3 or more.] |
| II. | Analytical Chemistry ; Lectures and Laboratory Work. | [Prof. L. B. Hall. | 3 or more.] |
| III. | Organic Chemistry ; Lectures and Laboratory Work. | [Prof. L. B. Hall. | 2.] |

BIOLOGY.

- I. Invertebrates; Lectures and Laboratory Work. [Dr. W. S. Hall. 2.]
II. Vertebrates; Lectures and Laboratory Work. [Dr. W. S. Hall. 2.]

Grading of Students.

STUDENTS are divided, according to their grades, into five sections, A, B, C, D, E. Each student is notified of the section to which he has been assigned, but the grades are not published. Section E is composed of those who cannot be advanced to the next higher class, nor receive their Bachelor's degree. Daily recitations, hour examinations, and final examination are all used as elements in determining the standing of a student.

Advanced Degrees.

BACHELORS OF ARTS AND BACHELORS OF SCIENCE of three years' standing may take the degrees of MASTER OF ARTS or MASTER OF SCIENCE, on submitting to the Executive Committee satisfactory evidence of continued good character, and passing an examination on some literary or scientific course of study which shall receive the approbation of the Faculty and Managers.

The following are stated as adequate courses of study to be presented by candidates for a second degree. Particulars can be had on application to the President.

I. Hebrew. Mitchell's Gesenius' Hebrew Grammar. Critical and philological reading and analysis of I and II Samuel; I and II Kings. Sight reading of Genesis, unpointed (edition of Muehlau et Kautzsch, Lipsiæ, 1885).

II. Assyrian. Lyon's Assyrian Manual. Friedrich Delitzsch's Assyrische Lesestücke. Syllabare (Sb. Sc.) S. 53-75. Neuassyrische Text (S. 110, 4-121).

III. The whole of the New Testament in Greek, with the introduction to N. T. of Scrivener, and of Westcott and Hort.

IV. The whole of Thucydides, together with Grote and Curtius on the Peloponnesian War; Greek composition.

V. Twelve Tragedies of *Æschylus*, *Sophocles*, or *Euripides*; Greek composition.

NOTE.—A course similar to IV and V may be arranged in other Greek authors.

VI. *Cicero's Tusculan Disputations* (five books), *De Natura Deorum* and *De Officiis*, together with the *History of Ancient Philosophy*; Latin composition.

VII. *Mommsen's* and *Merivale's Histories*; the whole of *Tacitus*; *Pliny's Letters*; Latin composition.

VIII. German Literature, with translation at sight from any of the leading authors, and an essay in German.

IX. French Literature, with translation at sight from any of the leading authors, and an essay in French.

X. Greek Literature, with translation at sight from any of the leading authors, and an essay in Greek.

XI. Latin Literature, with translation at sight from any of the leading authors, and an essay in Latin

XII. Pure Mathematics. Two of the following, or one in XII and one in XIII.

a. The Theory of Functions.

b. The Theory of Plane Curves.

c. The Theory of Surfaces.

d. The Theory of Numbers.

XIII. Applied Mathematics. Two of the following, or one in XII and one in XIII.

a. Attraction and Potential. Rigid Dynamics.

b. Partial Differential Equations and Spherical Harmonics.

c. Hydrostatics and Hydrodynamics.

d. Lunar and Planetary Theories.

e. Elasticity.

An elementary knowledge of the Calculus and of Analytical Geometry will be required.

XIV. Theoretical Astronomy (Computation of an Orbit—*Oppolzer*, *Watson*, or *Gauss*).

XV. Practical Astronomy (*Chauvenet* and *Doolittle*); Observatory Work.

XVI. *Rankine's Applied Mechanics*, or *Rankine's Civil Engineering*.

XVII. European History; Political, Constitutional, Economic.

XVIII. American History; Political, Constitutional, Economic.

Courses in History can be arranged by consultation with the Professor in charge of the department.

XIX. Ecclesiastical History. A general knowledge of the leading facts in Early Church History and an acquaintance with Greek and Latin will be required; a special subject may be selected from the following:

a. The Writings of *Barnabas* and *Justin* and the Teaching of the Twelve Apostles.

b. The Clementine and Ignatian Epistles.

c. The Ecclesiastical History of Eusebius.

XX. Germanic Philology and Literature. (One of the following to be selected):

a. *Anglo-Saxon*.—Grein's *Bibliothek der angelsächsischen Poesie*; Sweet's Edition (Early English Text Society) of the Anglo-Saxon Version of the *Cura Pastoralis*; Cook's Sievers' Anglo-Saxon Grammar. A knowledge of Gothic Grammar is required in this as in the next course.

b. *Middle High German*.—*Das Nibelungenlied*; Walther von der Vogelweide; *Gudrun*; History of Early German Literature; Old High German Grammar.

c. *Old Norse*.—A course similar to *a* and *b* can be arranged in Old Norse Literature and Philology.

XXI. English Literature. An intimate acquaintance with the authors of some characteristic epoch will be required, and a good English style, manifested in an original essay.

XXII. Physics. Any two of the following, with Laboratory work: Mechanics (Sturm); Fluid Motion (Lamb); Thermodynamics (Clausius); Electricity and Magnetism (part of Mascart and Joubert); Acoustics (Donkin); Geometrical Optics (Heath); Physical Optics (Preston).

The Laboratory work required will, in general, be along the lines of the student's reading, and will consist either in the skillful repetition of some piece of research, or in some independent work of scientific value.

XXIII. Comparative Morphology.

XXIV. General Pathology.

XXV. Comparative Embryology.

XXVI. Chemistry.

XXVII. Political Economy.

} Courses in these subjects can be arranged
by consultation with the Professor in charge
of the department.

Dissertations may be required in addition to examinations.

Candidates who are examined may also, if they desire, hand in Dissertations on topics in the field of study which they have specially investigated.

Resident Graduates, who have completed an adequate course of study, may be admitted to an examination for a second degree before the expiration of three years, if the Faculty deem it proper.

Graduates of other Colleges and Scientific Schools of good standing, who present satisfactory evidence of character and qualifica-

tions, will be admitted as candidates for the degree of Master of Arts. One year's residence at Haverford College will be required of all such students.

Bachelors of Arts and Science may be examined for the degrees of DOCTOR OF PHILOSOPHY and DOCTOR OF SCIENCE ; but such degrees will be conferred only after satisfactory proof of the faithful and successful prosecution of courses of study fully equal in extent and quality to those required for similar honors in the best Universities.

Notice of application for examination must be given to the President two months before Commencement. The examination for non-residents will be held during the last week in the Fifth month, and in no case at a later date. The fee for the Diploma of the Second Degree is Twenty Dollars ; of subsequent degrees, Thirty Dollars, to be paid in all cases before the 10th of the Sixth month.

ALUMNI PRIZE FOR COMPOSITION AND ORATORY.

THE Association of the Alumni, in the year 1875, established an ANNUAL PRIZE, either of a Gold Medal or of an equivalent value in Books and a Bronze Medal, for excellence in Composition and Oratory.

The prize was awarded last year to CLARENCE G. HOAG, of the class of 1893, for his oration on "The Influence of the Puritans on America."

The following are the rules governing the competition :

I. The Alumni Medal is offered yearly to the competition of the members of the Senior and Junior Classes, as a prize for the best delivered oration prepared therefor. The oration to be handed in to the Professor of English not later than Twelfth month first.

II. Three or five Judges shall be appointed from year to year by the Alumni Committee, who shall, on the evening of the last evening but one before the winter vacation, hear publicly, in Alumni Hall, all competitors who may be qualified to appear.

III. No oration shall occupy in delivery more than fifteen minutes.

IV. In making their award, while due weight is given to the literary merits of the oration, the Judges are to consider the prizes as offered to encourage more especially the attainment of excellence in elocution.

V. The Judges shall have the right to withhold the prize if the elocution and the literary merits of the oration fall below a suitable standard of excellence.

PRIZES FOR SYSTEMATIC READING.

Two prizes, of \$60 and \$40, respectively, will be given to those members of the Junior Class who, having creditably pursued their regular studies and paid proper attention to physical culture, shall have carried on the most profitable courses of reading of standard authors during the Sophomore and Junior years.

The direction of the work and the decision as to the award of the prizes shall be in the hands of a committee consisting of the President, the Librarian, and the Professor of English.

Either or both prizes may be omitted if, in the judgment of the committee, the work done does not justify the award.

THE CLASS OF 1870 PRIZE IN ENGLISH COMPOSITION.

This Prize, of the value of \$50, is offered under the following conditions: The competitors shall be members of the Senior and Junior Classes. The standard of merit is excellence in composition, with chief regard to subject-matter, originality, and a clear, forcible, and correct style. Unless definite subjects should be announced, the writers are at liberty to choose their own; but such a choice must be submitted to the approval of the President of the College. The papers should not exceed the limits of an ordinary short essay, and should excel as much in harmonious proportion of material as in particular points of style. All essays must be submitted, by Fifth month 1st, to a committee to be appointed by the Class of 1870. The Prize is to be announced on the night of the Alumni oration and at Commencement, and is to be recorded in the College Catalogue.

HONORS.

For the purposes of Honors studies are divided as follows :

- I. Ancient Languages and Literature.
- II. Modern Languages and Literature.
- III. Mathematics, Physics, and Astronomy.
- IV. Chemistry and Biology.
- V. History, Philosophy, and Political Science.
- VI. Latin and French.
- VII. Chemistry and Physics.

Students candidates for Honors shall elect from one group at least five hours per week during the Junior year, and eight hours per week during the Senior year, and shall make their announcements of candidacy at the beginning of the Junior year.

First and second Honors may be given, dependent on the judgment of the Professors immediately interested, to be decided by special examination or otherwise.

Honors shall be announced at Commencement and in the succeeding catalogue.

Library.

LIBRARIAN, Professor Allen C. Thomas; BENJAMIN CADBURY, *Assistant*.

THE number of bound volumes in the Library of Haverford College is 27,593; exclusive of the Baur Library the number is 20,958. Numerous American and European periodicals, scientific and literary, are taken by the Library.

Through the liberality of friends of the College the theological and miscellaneous library of the late Gustav Baur, for many years Professor of Theology in the University of Leipsic, was bought and given to the College in 1889. It consists of 6,635 volumes, besides several thousand pamphlets. It is rich in theology, Oriental languages, and in German literature. It has been classified, and a card catalogue prepared.

Recent donations enable the Library to expend the sum of about \$3,600 yearly for the purchase of books and periodicals.

The Library is open as a reading room from 9.30 A. M. to 8 P. M., during which time the volumes in the alcoves may be freely consulted. The Librarian devotes stated hours each week to the purpose of assisting and directing students in their reading, and in the intelligent use of books of reference and of authorities. He also arranges courses of reading.

Chemical Laboratory.

DIRECTOR, Dr. Lyman B. Hall; ASSISTANT, Charles G. Cook.

THE Laboratory Work comprises elementary experiments in General Chemistry; an extended study of the more important elements and their compounds; qualitative and quantitative analysis; the preparation of pure compounds; and experimental work illustrating chemical laws and theories.

Students may substitute for the last two years of the Scientific Course a special course in Chemistry, embracing both theory and laboratory work.

Opportunity is given for elementary or advanced special work, with ample facilities for its prosecution.

Physical Laboratory.

DIRECTOR, Dr. J. O. Thompson; ASSISTANT, Henry W. Scarborough.

THE Physical Laboratory occupies five medium-sized rooms, and is well equipped for work in the different departments of Physics. The apparatus has been selected with especial reference to quantitative rather than qualitative work, and includes in every department exact standards. The department of electricity has been exceptionally well equipped, and additions are gradually being made to the apparatus in all departments.

The students are instructed in the accurate measurement of various physical quantities in mechanics, heat, light, and electricity. They are also assigned a certain amount of qualitative work leading up to a more intimate knowledge of the properties of matter.

The work of the more advanced students is supplemented by reading in the foreign and domestic scientific journals which are accessible in the Library.

Biological Laboratory.

DIRECTOR, Dr. W. S. Hall; ASSISTANT, Henry S. Conard.

THE Biological Laboratory has, among its appointments, sixteen compound microscopes, three microtomes, turn-tables, warm-stages, dissecting microscopes, injecting appliances, photographic appliances, stage and eye-piece micrometers, incubators, water baths, glassware, reagents, aquaria, etc. Also a reference library of 200 recent works on Biology.

Students taking the Scientific Course work in the Laboratory two and a half hours a week during the Freshman and Sophomore years.

General Biology.—First half-year. General experiments, the Pteris fern, the earthworm; Sedgwick and Wilson's *Introduction to General Biology*.

Botany.—Second half-year. Gross and minute structures of types of each plant series; Arthur, Barnes and Coulter's *Plant Dissection*.

I. *Invertebrates*.—First half of second year. Gross and minute anatomy of representative types; Brooks' *Invertebrate Zoology*.

II. *Vertebrates*.—Last half of second year. Gross anatomy of fish, frog, turtle, pigeon, and rabbit.

III. *Histology*.—Elective half-year. Schaeffer's *Essentials of Histology* and Klein's *Histology*.

IV. *Embryology*.—Elective half-year. Embryology of the chick.

V and VI. *Advanced Work* in the gross anatomy and in the comparative osteology of mammals.

Museum.

CURATOR, Dr. W. S. Hall; ASSISTANT CURATORS, L. A. Bailey, Geo. L. Jones.

ORNITHOLOGY, Mineralogy, Geology, Conchology, Paleontology, and Invertebrate Zoology are well represented. The Herbarium contains about 3,000 species, many of which are foreign. Specimens in each department are classified and catalogued, and are used by lecturers and students in the class-rooms and laboratories.

Mechanical Laboratory.

DIRECTOR, Professor Levi T. Edwards.

THE MECHANICAL LABORATORY occupies a commodious building erected in 1890 especially for the Engineering Department. It contains a machine shop, carpenter shop, blacksmith shop, foundry, draughting room, blue-printing room, and stock room. The machine shop contains, besides several complete sets of machinists' tools for vise work, several lathes, a planer, sharper, drill press, vises, etc. The carpenter shop contains several complete sets of carpenters' tools, two wood lathes, and a band saw. The foundry and blacksmith shop are well equipped.

The instruction begins with a series of graded exercises, which teach accuracy in the use of tools and illustrate the principles of machine construction. This is followed by practice in the construction of parts of machinery and the building of complete machines.

The students, under the care of the Director, are taken from time to time to visit machine shops and engineering constructions in Philadelphia and vicinity.

Astronomical Observatory.

DIRECTOR, W. H. Collins.

THE HAVERFORD OBSERVATORY affords the students the means of becoming familiar with the use of astronomical instruments, and of acquiring, from actual observation, a practical acquaintance with Astronomy.

It contains two Equatorial Telescopes, one by Clark, having an object-glass 10 inches in diameter, and one with an object-glass of $8\frac{1}{4}$ inches, with filar micrometer and eye-pieces ; a polarizing eye-piece ; a Newtonian Reflector, with a silver-on-glass speculum of $8\frac{1}{4}$ inches diameter ; a Prism Spectroscope ; a Meridian Transit Circle having a Telescope of $3\frac{3}{4}$ inches aperture, with a circle at each end of the axis 26 inches in diameter ; a Zenith Instrument of $1\frac{3}{4}$ inches aperture, with a micrometer ; two Sidereal Clocks, one with mercurial compensation, the other used to connect with a Bond's Magnetic Chronograph.

The latitude of the observatory is $40^{\circ} 0' 40''$ N. ; its longitude, 6 minutes 59.4 seconds East from Washington.

A Special Course in Astronomy is offered to amateurs and teachers. The requisites for the course and the fees charged will depend on the work which the applicant desires to perform.

The Gymnasium.

DIRECTOR, Dr. W. S. Hall.

THE GYMNASIUM is fitted with the apparatus of Dr. D. A. Sargent, of Harvard University. The Director gives systematic instruction based upon careful physical examination. Required work begins Twelfth month 1st and ends Fourth month 1st, and occu-

pies three hours each week. It is arranged in three courses, each occupying one season. Students entering the Freshman Class are required to take the three courses, one each year, unless given advanced standing on previous systematic gymnasium drill. Students entering the Sophomore Class are required to complete two of the courses, with a privilege of taking advanced standing.

Societies.

THE LOGANIAN SOCIETY was established by the Officers and Students in 1834.

THE EVERETT-ATHENÆUM is a literary society of the students.

A flourishing branch of the YOUNG MEN'S CHRISTIAN ASSOCIATION exists at the College.

Degrees, Prizes, and Honors Granted in 1892.

At the Commencement in 1892 Degrees were granted after examination to the following graduates :

BACHELOR OF ARTS.

RICHARD BRINTON,	RUFUS HACKER HALL,
I. HARVEY BRUMBAUGH,	WALTER MORRIS HART,
BENJAMIN CADBURY,	GILBERT JOSEPH PALEN,
JOSEPH HENRY DENNIS,	RALPH WARREN STONE,
WARREN H. DETWILER,	W. NELSON LOFLIN WEST,
STANLEY RHODS YARNALL.	

BACHELOR OF SCIENCE.

AUGUSTINE W. BLAIR,	FRANKLIN MCALLISTER,
EGBERT SNELL CARY,	JOHN WALLINGFORD MUIR,
MINTURN POST COLLINS,	WILLIAM HOPKINS NICHOLSON, JR.,
CHARLES GILPIN COOK,	WILLIAM ELLIS SHIPLEY,
WILLIAM PEARSON JENKS,	JOSEPH REMINGTON WOOD.

MASTER OF ARTS.

ALLEN BALLINGER CLEMENT,	JOHN WETHERILL HUTTON,
WILLIAM HENRY COLLINS,	JOHN STOKES MORRIS,
CHARLES THURSTON COTTRELL,	THOMAS NEWLIN,
ELMER H. GIFFORD,	JONATHAN MOWRY STEERE,
BYRON CHARLES HUBBARD,	ISAAC SUTTON.

MECHANICAL ENGINEER,

DAVID LANE MEKEEL.

PRIZES.

The Alumni Prize for Composition and Oratory (\$50) was awarded to

CLARENCE GILBERT HOAG.

THE PRIZES FOR SYSTEMATIC READING WERE AWARDED TO

First Prize (\$60),	LESLIE A. BAILY.
Second Prize (\$40),	WALTER W. HAVILAND.

HONORS.

General Honors,	STANLEY RHOADS YARNALL.
Second Honors in Classics,	STANLEY RHOADS YARNALL.
Second Honors in Modern Languages, {	WALTER MORRIS HART.
	BENJAMIN CADBURY.
	W. NELSON LOFLIN WEST.
Second Honors in Political Science, . .	WARREN H. DETWILER.
Second Honors in Chemistry,	CHARLES GILPIN COOK.
Second Honors in Physics,	EGBERT SNELL CARY.

List of Graduates and Honorary Degrees.

(Degrees conferred by other institutions are indicated by *italics*.)

THE ONLY DEGREE GRANTED ON GRADUATION BEFORE 1877 WAS THAT OF
BACHELOR OF ARTS.

GRADUATES.

- | | |
|--|---|
| 1836 | *Thomas Kimber, Jr. LTT.D., *1890 |
| Thomas F. Cock, <i>M.D.</i> , LL.D. | James J. Levick, <i>M.D.</i> , A.M. |
| Joseph Walton | Edmund Rodman, A.M. |
| 1837 | Thomas R. Rodman, <i>A.B.</i> |
| *William C. Longstreth, *1881 | Benjamin R. Smith |
| *David C. Murray, *1885 | Augustus Taber |
| Lindley Murray | Caleb Winslow, <i>M.D.</i> |
| *Benjamin V. Marsh, *1882 | 1843 |
| *Joseph L. Pennock, *1870 | Robert B. Howland |
| Robert B. Parsons | Francis White |
| *Charles L. Sharpless, *1882 | *William D. Stroud, <i>M.D.</i> , *1883 |
| *Lloyd P. Smith, A.M., *1886 | 1844 |
| *B. Wyatt Wistar, *1869 | Evan T. Ellis |
| 1838 | Robert B. Haines |
| *James V. Emlen, <i>M.D.</i> , *1880 | Isaac Hartshorne |
| John Elliott | 1845 |
| 1839 | Edmund A. Crenshaw |
| *Frederic Collins, *1892 | *Robert Pearsall, *1849 |
| Thomas P. Cope | 1849 |
| Henry Hartshorne, <i>M.D.</i> , A.M., LL.D., | Albert K. Smiley, A.M. |
| Nereus Mendenhall, <i>M.D.</i> , | Alfred H. Smiley, A.M. |
| Richard Randolph, Jr., <i>M.D.</i> | 1851 |
| *Charles Taber, *1887 | Joseph L. Bailey |
| 1840 | Philip C. Garrett |
| *Joseph Howell, *1889 | Thomas J. Levick |
| Anthony M. Kimber | Franklin E. Paige, A.M. |
| *Henry H. G. Sharpless, *1870 | Zaccheus Test, <i>M.D.</i> , A.M. |
| *John R. Winslow, <i>M.D.</i> , *1866 | James C. Thomas, <i>M.D.</i> , A.M. |
| 1841 | Richard Wood |
| *Richard H. Lawrence, *1847 | 1852 |
| *James P. Perot, *1872 | Douglas Clark, <i>M.D.</i> |
| *Elias A. White, *1866 | Lewis N. Hopkins |
| 1842 | William L. Kinsman |
| Robert Bowne | William E. Newhall |
| Richard Cadbury | James Whitall |
| *William S. Hilles, *1876 | |

1853

William B. Morgan, A.M.
William H. Pancoast, *M.D.*, A.M.

1854

Frederick Arthur, Jr.
John W. Cadbury
John B. Garrett
David Scull, Jr.

1855

*Samuel Bettie, *1859
John R. Hubbard, A.M.

1856

Bartholomew W. Beesley
Joel Cadbury, Jr.
Jonathan J. Comfort, *M.D.*
*James M. Walton, *1874
Edward R. Wood, A.M.

1857

Jesse S. Cheney, A.M.
*Cyrus Mendenhall, *1858
Stephen Wood

1858

Thomas H. Burgess
Thomas Clark
Daniel W. Hunt
*Samuel T. Satterthwaite, *1865
William G. Tyler
Thomas Wistar, A.M., *M.D.*
Ellis H. Varnall, *LL.B.*

1859

*Richard W. Chase, *1865
James R. Magee
*Richard C. Paxson, *1864
*Edward Rhoads, *M.D.*, *1871
Edward C. Sampson,
*George Sampson, *1872
Abram Sharples, *M.D.*
Benjamin H. Smith

1860

*Lindley M. Clark, *1861
*William B. Corbit, *M.D.*, *1882
*William M. Corlies, *1881
Cyrus Lindley
Theodore H. Morris
Frederick W. Morris
Richard Pancoast
John W. Pinkham, *M.D.*

Francis Richardson
Clement L. Smith, A.M., *LL.D.*
James Tyson, *M.D.*, A.M.
Silas A. Underhill, *LL.B.*

1861

Edward Bettie, Jr.
*Henry Bett'e, *1886
*Charles Bettie, *1883
William B. Broomall
Charles H. Jones
*Thomas W. Lamb, A.M., *M.D.*, *1878
William N. Potts
Jehu H. Stuart, A.M., *M.D.*
John C. Thomas

1862

Henry T. Coates, A.M.
*Samuel A. Hadley, *1864
Horace G. Lippincott
George B. Mellor
Horace Williams, *M.D.*
Isaac F. Wood

1863

Thomas J. Battey, A.M.
George M. Coates, Jr., A.M.
William M. Coates
*Richard T. Jones, *1869
William H. Morris
Joseph G. Pinkham, *M.D.*, A.M.

1864

*Franklin Angell, A.M., *1882
*William Ashbridge, *M.D.*, *1884
Edward H. Coates
Howard M. Cooper, A.M.
Albin Garrett
Morris Longstreth, *A.B.*, *M.D.*, A.M.
Albert Pancoast
Charles Roberts
E. Pope Sampson
*Edward L. Scull, *1884
*Randolph Wood, *1876

1865

John R. Bringham
*Edward T. Brown, *1892
James A. Chase
Joseph M. Downing
Arthur Haviland
*David H. Nichols, *1865
Henry W. Sharpless

*George Smith, Jr., *1872
Robert B. Taber, A.M.
Allen C. Thomas, A.M.
Benjamin A. Vail
Caleb Cresson Wistar

1866

A. Marshall Elliott, A.M.
Benjamin E. Valentine, *LL.B.*

1867

*John Ashbridge, *1881
George Ashbridge, A.M., *LL.B.*
William P. Clark, A.M., *LL.B.*
Samuel C. Collins, A.M.
Nathaniel B. Crenshaw
Charles H. Darlington, A.M.
*William T. Dorsey, *M.D.*, *1870
B. Franklin Eshleman
Richard M. Jones, A.M., *LL.D.*
*Charles W. Sharpless, *1889
Walter Wood

1868

Edward H. Cook
*Alexis T. Cope, *1883
Benjamin C. Satterthwaite
Louis Starr, *M.D.*
S. Finley Tomlinson
Joseph H. Wills, A.M., *M.D.*

1869

Johns H. Congdon
Henry Cope, A.M.
Ludovick Estes, *A.M.*
*Henry Eval, A. M., *1877
*William B. Kaighn, *1876
Pendleton King, A. M.
William H. Randolph
Edward B. Taylor, *M. C. E.*
William S. Taylor
James G. Whitlock
Walter Wood
Henry Wood, *Ph.D.*

1870

J. Stuart Brown
John E. Carey
Alford G. Coale
Howard Comfort
T. Allen Hilles
William H. Hubbard, *M.D.*
*Thomas K. Longstreth, A.M., *1883
Oliver G. Owen, A. M.

*Charles E. Pratt, A.M.
David F. Rose
*John D. Steele, *1886
Charles Wood, A. M.
Stuart Wood, *Ph.D.*

1871

Henry G. Brown
William P. Evans
John S. Garrigues
Reuben Haines, A.M.
William H. Haines
Joseph Hartshorne
Jesse F. Hoskins
Walter T. Moore
Ellis B. Reeves
Alfred R. Roberts, *C.E.*
Charles S. Taylor
Edward D. Thurston
Randolph Winslow, *M.D.*, A.M.

1872

Richard Ashbridge, *M.D.*
Richard T. Cadbury, *A.B.*, *A.M.*
James Carey, Jr., *LL.B.*
Thomas S. Downing, Jr.
Walter Erben
Thomas Roland Estes
John E. Forsythe
William H. Gibbons, A.M.
Francis B. Gummere, *A.B.*, A.M.,
Ph.D.

Casper Wistar Haines, A.M., *C.E.*
Abram Francis Huston
*Marmaduke Cope Kimber, A.M., *1878
William M. Longstreth
Richard H. Thomas, *M.D.*

1873

James C. Comfort
Thomas P. Cope, Jr.
George W. Emlen
Joseph M. Fox
Henry C. Haines
Benjamin H. Lowry, A.M.
Alden Sampson, A. M.
*Julius L. Tomlinson, A.M., *1890

1874

Edward P. Allinson, A.M.
John G. Bullock
James Emlen
Charles R. Hartshorne, *LL.B.*
Samuel E. Hilles

John B. Jones
 *Mahlon Kirbybride, * 1889
 Theophilus P. Price
 James B. Thompson
 Joseph Trotter

1875

Edward K. Bispham
 Alonzo Brown, A.M.
 J. Franklin Davis, A.M.
 Charles E. Haines
 William Hunt, Jr.
 Charles L. Huston
 Harold P. Newlin
 Walter W. Pharo
 Charles E. Lebbetts
 Miles White, Jr.

1876

Francis G. Allinson, A.M., *Ph.D.*
 David S. Bispham
 Reuben C. Iton
 Henry W. Dudley
 Seth K. Gifford, A.M.
 L. Lyndon Hobbs, A.M.
 Richard H. Holme

*Thomas William Kimber, * 1885
 Charles A. Longstreth
 J. Whitall Nicholson
 Percival Roberts, Jr.
 Frank H. Taylor
 Howard G. Taylor
 *Lewis A. Taylor, * 1881

1877

A.B.

Isaac W. Anderson
 Frederic L. Bailly
 Isaac Forsythe
 James D. Krider
 George G. Mercer, *LL.M., J. C. D.*
 Wilson Townsend

S.B.

William F. Smith

1878

A.B.

Henry Bailly, A.M.
 Albert L. Bailly
 Francis K. Carey, *LL.B., A.M.*
 Edward T. Comfort
 Charles S. Crosman, *LL.B.*
 Samuel H. Hill

Lindley M. H. Reynolds
 Daniel Smiley, Jr.
 Henry L. Taylor, A.M., *M.D.*
 John M. W. Thomas
 George W. White

S.B.

Jonathan Eldridge
 Edward Fosythe
 Cyrus P. Frazier, *A.B.*
 Robert B. Haines, Jr.
 Henry N. Stokes, *Ph.D.*

1879

A.B.

Samuel Bispham, Jr.
 Edward Gibbons
 John H. Gifford, *M.D.*
 Francis Henderson, *LL.B.*
 William C. Lowry
 John B. Newkirk
 John E. Sheppard, Jr., *M.D.*

1880

A.B.

Charles F. Brédé, A.M.
 Charles E. Cox
 Josiah P. Edwards
 James L. Lynch
 Samuel Mason, Jr.
 William F. Perry
 Joseph Rhoads, Jr., A.M.

S.B.

William Bishop
 Alexander P. Corbit
 Charles E. Gause, Jr.
 Edward M. Jones

1881

A.B.

William A. Blair
 A. Morris Carey
 Levi T. Edwards, A.M.
 Edward Y. Hartshorne
 Isaac T. Johnson, A.M.
 Edwin O. Kennard
 Jesse H. Moore
 William E. Page
 Walter F. Price, A.M., *A.M.*
 Thomas N. Winslow
 John C. Winston

S.B.

Walter Brinton
 William H. Collins, A.M.
 Joseph H. Cook
 Davis H. Forsythe
 Albanus L. Smith

1882

A.B.

George A. Barton, A.M., A.M., Ph.D.
 Isaac M. Cox
 Richard B. Hazard
 Wilmot R. Jones
 *Wilmer P. Leeds, *1885.
 J. Henley Morgan
 Edward Randolph

S.B.

John E. Coffin
 Daniel Corbit
 George L. Crosman
 Frederic D. Jones
 T. Chalkley Palmer
 Lindley M. Winston

1883

A.B.

John Blanchard, LL.B.
 Frank E. Briggs
 George H. Evans
 Francis B. Stuart
 Bond V. Thomas
 Thos. K. Worthington, LL.B., Ph.D.

S.B.

William L. Bailly
 Stephen W. Collins, LL.B.
 D. William Edwards
 William E. Scull
 Samuel B. Shoemaker, M.D.
 John D. Spruance
 W. Alpheus White
 Charles H. Whitney
 Louis B. Whitney

1884

A.B.

John Henry Allen, A.M.
 Orren William Bates
 Thomas Herbert Chase
 William J. Haines
 Arthur D. Hall
 Charles R. Jacob
 Alfred Percival Smith, LL.B.

S.B.

Louis T. Hill
 Walter L. Moore
 George Vaux, Jr., LL.B.

L.B.

Francis A. White

1885

A.B.

Samuel Bettle
 Enos L. Doan
 William T. Ferris
 William S. Hilles
 William T. Hussey
 Arthur W. Jones, A.M.
 Rufus M. Jones, A.M.
 Joseph L. Markley, A.M., A.M., Ph.D.
 Marriott C. Morris
 Augustus T. Murray, Ph.D.
 Augustus H. Reeve
 William F. Reeve
 Isaac Sutton, A.M., A. M.
 Elias H. White, LL.B.
 William F. Wickersham, A.M.

S.B.

Charles W. Bailly
 John J. Blair
 Thomas Newlin, A.M.
 Theodore W. Richards, A.M., Ph.D.
 *Matthew T. Wilson, *1891

1886

A.B.

Jonathan Dickinson, Jr.
 Alexander H. Scott
 Horace E. Smith
 Edward D. Wadsworth, LL.B.

S.B.

Thomas W. Betts
 Guy R. Johnson
 William S. McFarland
 *Israel Morris, Jr., *1891
 William P. Morris
 Alfred M. Underhill, Jr.
 Wilfred W. White

1887

A.B.

Jay Howe Adams, M.D.
 Edward B. Cassatt
 William H. Futrell

Alfred C. Garrett, *A.B., A.M., Ph.D.*
 Henry H. Goddard, *A.M.*
 Willis H. Hazard
 Barker Newhall, *A.M., Ph.D.*
 Jesse E. Philips, Jr., *A. M.*
 Henry W. Stokes
 Frederic H. Strawbridge
 Richard J. White
 George B. Wood
 William C. Wood

S.B.

*Arthur H. Bailly, *1889

Charles H. Bedell

Allen B. Clement, *A.M.*

Horace V. Evans, Jr.

Hugh Lesley

*William W. Trimble, *1891

B.E.

P. Hollingsworth Morris

1888

A.B.

E. Morris Cox

Howell S. England, *A.M.*Allison W. Slocum, *A.M.*Martin B. Stubbs, *A.M.*

S.B.

Charles H. Battey

John C. Corbit, Jr.

Morris E. Leeds

William Draper Lewis, *LL.B., Ph.D.*Henry V. Gummere, *A.M., A.M.*Francis C. Hartshorne, *LL.B.*

Joseph T. Hilles

George B. Roberts

Joseph W. Sharp

B.E.

Lawrence P. Beidelman

Joseph E. Johnson, Jr., *M.E.*

Frederick W. Morris, Jr.

Richard J. Morris

1889

A.B.

Robert C. Banas

Thomas F. Branson, *M.D.*Charles H. Burr, Jr., *A.M.*

Thomas Evans

Warner H. Fite

Warren C. Goodwin

Victor M. Haughton

Franklin B. Kirkbride

Daniel C. Lewis

Lawrence J. Morris

William F. Overman

Frank W. Peirson, *A.M.*

Samuel Prioleau Ravenel, Jr.

Walter George Reade

Lindley M. Stevens, *A.M.*

John Stoddell Stokes

*Layton W. Todhunter, *1889

Frederick N. Vail, *A.M.*

Gilbert C. Wood

S.B.

William R. Dunton, *A.M.*Arthur N. Leeds, *A.M.*

J. Henry Painter

David J. Reinhardt

Frank E. Thompson, *A.M.*

B.E.

Herbert Morris

1890

A.B.

Edward M. Angell

James Stuart Auchincloss

William G. Audenried, Jr.

Henry R. Bringham, Jr.

Charles T. Cottrell, *A.M.*

Guy H. Davies

Robert E. Fox

Henry L. Gilbert, *A.M.*

William G. Jenkins

Thomas S. Kirkbride

Jonathan M. Steere, *A.M.*

S.B.

Thomas Amory Coffin

Percy S. Darlington

William M. Guilford, Jr.

John N. Guss

Edwin J. Haley, *A.M.*Robert R. Tatnall, *A.M.*Dilworth P. Hibberd, *A.M.*

Alfred C. Tevis

B.E.

John F. Taylor Lewis

Edward R. Longstreth

William Percy Simpson

Ernest Forster Walton

1891	Joseph Henry Dennis
A.B.	Warren H. Detwiler
Harry Alger	Rufus Hacker Hall
David H. Blair,†	Walter Morris Hart
Henry A. Todd	Gilbert Joseph Palen
	Ralph Warren Stone
S.B.	W. Nelson Loflin West
William W. Handy	Stanley Rhoads Yarnall
Arthur Hoopes	
John Wetherill Hutton, A.M.	S.B.
David L. Mekeel, M.E.	Augustine W. Blair
John Stokes Morris, A.M.	Egbert Snell Cary
George Thomas, 3d	Minturn Post Collins
	Charles Gilpin Cook
1892	William Pearson Jenks
A.B.	Franklin McAllister
Richard Brinton	John Wallingford Muir
I. Harvey Brumbaugh	William Hopkins Nicholson, Jr.
Benjamin Cadbury	William Ellis Shipley
	Joseph Remington Wood

Whole number of graduates, 498.

The following graduate students have received Advanced Degrees not having been undergraduates at Haverford :

1890.

William B. Eaton, A.B., Wesleyan, 1889, A.M.
 Charles L. Michener, A.B., Penn, 1884, A.M.
 Charles E. Pritchard, A.B., Earlham, 1889, A.M.
 William E. Sayrs, A.B., Wilmington, 1889, A.M.
 Charles E. Terrell, S.B., Earlham, 1888, A.M.
 Charles H. Thurber, Ph.B., Cornell, 1886, A.M.
 Robert W. Rogers, A.B., Johns Hopkins, 1887, Ph.D.

1891.

Lawrence M. Byers, A.B., Penn, 1890, A.M.
 William H. Carroll, A.B., Wilmington, 1890, A.M.
 Myron F. Hill, A.B., Harvard, 1890, A.M.
 Lucian M. Robinson, A.B., Harvard, 1882, A.M.

1892.

Elmer H. Gifford, S.B., Penn, 1888, A.M.
 Byron Charles Hubbard, S.B., Earlham, 1891, A.M.

Honorary Degrees.

1858

Hugh D. Vail, A.M.

1859

*Joseph W. Aldrich, A.M., * 1865

1860

*John G. Whittier, A.M., * 1892

1864

Edward D. Cope, A.M.

1867

Joseph Moore, A.M.

1872

William Jacobs, A.M.

1875

*Samuel Alsop, Jr., A.M., * 1888

1876

*Pliny E. Chase, LL.D., * 1886
William H. Pancoast, A.M.

1877

John J. Thomas, A.M.

1879

Richard M. Jones, A.M.
Ellis Yarnall, A.M.

1880

Thomas Chase, LL.D.
Thomas Hughes, LL.D.

1882

Henry T. Coates, A.M.

1883

Thomas F. Cock, LL.D.
James Wood, A.M.
Henry N. Hoxie, A.M.

1884

Joseph Parrish, A.M.
Elijah Cook, A.M.

1885

*Julius L. Tomlinson, A.M., * 1890
Robert Howland Chase, A.M.

1886

Edward H. Magill, LL.D.

1887

*Thomas Kimber, LL.D., * 1890

1888

Clement L. Smith, LL.D.

1890

Joseph John Mills, LL.D.

1891

Richard M. Jones, LL.D.

THE FACULTY

desires to place a copy of the Annual Catalogue in the hands of every alumnus and member of the corporation. It is requested that all omissions that become known be reported to the Secretary of the College.

HAVERFORD COLLEGE STUDIES.

- No. 1.—The Library of the Convent of the Holy Sepulchre at Jerusalem;
J. Rendel Harris.
Work of Haverford College Observatory; F. P. Leavenworth.
On the Geometry of a Nodal Circular Cubic; Frank Morley.
On the Period of Rotation of the Sun; Henry Crew.
On the Symbolic Use of the Colors Black and White in Germanic
Tradition; Francis B. Gummere.
- No. 2.—The Rest of the Words of Baruch; J. Rendel Harris.
Some Esarhaddon Inscriptions; Robert W. Rogers.
- No. 3.—The Passion of Perpetua; J. Rendel Harris and Seth K. Gifford.
On Some Properties of the Triangle; Frank Morley.
- No. 4.—On the Numerical Characteristics of a Cubic Curve; Charlotte Angas
Scott.
On the Caustic of the Epicycloid; Frank Morley.
Sun-Spot Observations; H. V. Gummere and F. P. Leavenworth.
On a New Manuscripts of the Four Gospels; W. C. Braithwaite.
A Catalogue of Manuscript (chiefly Oriental) in the Library of Hav-
erford College; Robert W. Rogers.
The Passion of Perpetua; translated by Seth K. Gifford.
Specimens of Uncial Lectionaries from Mount Sinai; J. Rendel
Harris.
- No. 5.—The Diatessaron of Tatian, a Preliminary Study; J. Rendel Harris.
- Nos. 6 and 7.—The Apology of Aristides; J. Rendel Harris.
- No. 8.—The Codex Bezae; J. Rendel Harris.
- No. 9.—The Codex Sangallensis; J. Rendel Harris.
Unpublished Inscriptions of Esarhaddon; Robert W. Rogers.
- No. 10.—Some Interesting Inscriptions; J. Rendel Harris.
Stellar Parallax; F. P. Leavenworth.
Conform Representation by Means of the p -Function; Frank Morley.
- No. 11.—Municipal Government in England; Isaac Sharpless.
Myth and Allegory; Francis B. Gummere.
Professor Ewing's Theory of Magnetism; Arthur Hoopes.
New Method of Obtaining a Constant Temperature; Henry Crew.
Errors from the Use of Decimals; Ernest W. Brown.
Parallax of Delta Herculis; F. P. Leavenworth.
Double Star and Sun-Spot Observations; F. P. Leavenworth and
W. H. Collins.

PRICE, ONE DOLLAR PER NUMBER.

Other numbers will appear as material accumulates.

For copies address

The Secretary of Haverford College,
Haverford College P. O., Pa.

HAVERFORD COLLEGE.



1893-94.



CATALOGUE

OF

HAVERFORD COLLEGE.

(HAVERFORD P. O., PA.)

1893-94.



PHILADELPHIA :

PRESS OF FRANKLIN PRINTING COMPANY,

516 MINOR STREET.

CALENDAR.

College Year 1893-94 began	9th Mo. 20
Winter Recess begins	12th Mo. 22
Winter Term begins, 1894*	1st Mo. 3
Mid-year Examinations begin	1st Mo. 23
Second Half-year begins	2d Mo. 1
Junior Exercises	4th Mo. 11
Spring Recess begins	4th Mo. 12
Spring Term begins*	4th Mo. 24
Alumni Meeting	6th Mo. 13
Examinations for Admission, 9.30 A. M.	6th Mo. 14
Commencement Day, 1894	6th Mo. 15

VACATION.

Examinations for Admission, 9.30 A. M.	9th Mo. 25
College Year 1894-95 begins*	9th Mo. 26
Winter Recess begins	12th Mo. 23
Winter Term begins 1895*	1st Mo. 4
Second Half-year begins 1895*	2d Mo. 1
Spring Recess begins	4th Mo. 11
Spring Term begins	4th Mo. 22
Alumni Meeting	6th Mo. 12
Examinations for Admission, 9.30 A. M.	6th Mo. 13
Commencement Day, 1895	6th Mo. 14

* The first recitations are due promptly at *half-past nine o'clock* at the beginning of each term. No absences from them are excused, unless clearly unavoidable.

History and Description.

IN the spring of 1830, a meeting of a few Friends in Philadelphia, shortly followed by a similar meeting in New York, originated Haverford School. The joint committee expressed the object of the effort as follows: "The members of the Society of Friends, having hitherto labored under very great disadvantages in obtaining for their children a guarded education in the higher branches of learning, combining the requisite literary instruction with a religious care over the morals and manners of the scholars, . . . and carefully preserving them from the influence of corrupt principles and evil communications, it is therefore proposed that an institution be established in which the children of Friends shall receive a liberal education in ancient and modern literature, and the mathematical and other sciences."

The \$40,000 supposed to be necessary was raised without great effort, and the committee went out to seek a location. They say: "We wished to procure a farm in a neighborhood of unquestionable salubrity—within a short distance of a Friends' meeting—of easy access from this city at all seasons of the year, . . . and that was recommended by the beauty of the scenery and a retired situation." Then they go on to say that of the many places presented to them the only one which combined all the advantages was one of 198½ acres (since increased to 215), "near the eight-mile stone on the Lancaster Turnpike." They explain the present and prospective merits of the farm, the beauty of the natural woods, the unfailing springs of purest water, the nearness to the new Pennsylvania Railroad, in words which the succeeding half-century has amply justified.

On the 28th of Tenth month, 1833, the school opened with 21 students. Provision had been made for three teachers and a superintendent.

“A Teacher of Ancient Languages and Ancient Literature.

“A Teacher of English Literature, and Mental and Moral Philosophy.

“A Teacher of Mathematics and Natural Philosophy.”

The Superintendent was to have charge of the government, order, and domestic economy of the family.

The regulations of the new school were rigid. The bounds and time of the boys were very strictly marked out. All the details of the daily programme were arranged with great care; and if the elaborate provision of a number of wise men for the normal growth of students could convert boys into perfect men, the students of Haverford of fifty years ago had every advantage.

The High School thus established grew rapidly into prosperity and debt. The charges were low, the teachers were liberally paid, and the years which followed were marked by a constant endeavor to produce a maximum of good fruits from very limited funds. The deficiencies were made up in a liberal spirit, and a constant growth maintained by frequent subscriptions. All the time the school was justifying the effort by the quality of its results, and making for itself an increasing number of friends.

One of the first acts of the committee, after the absolute necessities of the school were provided for, was to construct a gymnasium, and make arrangements for systematical physical work. They were determined that the advantage gained by the salubrity of the surroundings should not be lost for want of exercise. Under their care the lawn was graded at great expense, and foreign and native trees set out, with the design to make it a great arboretum. Cricket was introduced, a game not known elsewhere in America, and has flourished since. A greenhouse and flower-garden were established and maintained for twenty years by the work of the boys. The ideas that have done harm elsewhere, that schools were places for mental development only, had no foothold here, but morals, muscles, and senses received their due share of culture.

In 1845 a temporary suspension was decreed, to allow the funds to accumulate and give time for the collection of an endowment, which suspension lasted for three years. In 1852 the observatory

was built, and supplied with an 8-inch equatorial and 4-inch transit. In 1856 the school was changed to a college, and authorized by the Legislature to grant degrees, but previous to this time the course had been as extended as in many colleges. It was still hampered with a large preparatory department, which was not abolished till 1861. In 1863 the Alumni Hall and Library were built. In 1876-7 Barclay Hall, containing private dormitories and study-rooms, was erected, at a cost of \$82,000, which was collected by subscription. The Chemical Laboratories were perfected in 1878. The new Observatory was built in 1883, the Mechanical Laboratory established in 1884, and a new building erected in 1890; the Biological Laboratory was established in 1886, and the Physical Laboratory in 1888. Chase Hall, for lecture and recitation-rooms, was built in 1888, and the Cricket Shed in 1893.

During this time Haverford had developed into a fully-organized college. Many rules, adapted to boys of a boarding-school age, had been modified or abandoned, though enough of restraint was retained to provide against demoralization. The standard of admission was raised. Students of any denomination were admitted, though Friends still retained the general control. The number of teachers was increased five-fold. By various donations and bequests the endowment fund was enlarged. The annual charge was increased from \$200 to \$500,* which still fails to represent what the college has to pay for professors' salaries and board and care of students. Retaining the old idea of a "guarded education" and "a religious care over morals and manners," the college has sought to effect these results, and has measurably succeeded, rather by appeals to Christian principle and manliness than by arbitrary power.

In Barclay Hall, the hall of residence, two students occupy a study-room, and each has his private, adjoining bed-room. A few single rooms are also provided. Recitation-rooms, laboratories, and dining-room are in Founders' Hall. The Library and Observatory are in separate buildings near by. Some of the professors live in

* The price may vary, depending on the situation of the room, from \$400 to \$525. Most of the rooms involve a payment of \$500.

the halls with the students, and others have cottages on the grounds.

The college has a remarkably pleasant and healthful location in the township of Haverford, Delaware County,* Pa., nine miles west of Philadelphia, on the Pennsylvania Railroad. The buildings are surrounded by grounds of about sixty acres, tastefully laid out, and adorned with well-kept lawns, and a great variety of trees and shrubbery. These grounds comprise excellent fields for cricket, base-ball, foot-ball, tennis, and other field games, a running and bicycle track, and a pond for skating.

The courses of study are designed to give a liberal education. Their scope will be seen on the following pages. Religious instruction is carefully provided. In addition to the daily reading of the Holy Scriptures, recitations in the English or Greek New Testament or in Scripture History are required of the student once a week. By exposition and collateral information the instructors endeavor to enforce the true meaning of the lessons. Haverford College desires to inculcate the simple truths of the Christian religion.

* Haverford *Post-Office* is in Montgomery County.

Corporation.

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233 Chestnut Street, Philadelphia.

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Professor of English and German.

FRANK MORLEY, A. M.,
Professor of Pure Mathematics.

ERNEST WILLIAM BROWN, A. M.,
Professor of Applied Mathematics.

JOSEPH OSGOOD THOMPSON, PH. D.,
Instructor in Physics.

WILLIAM H. COLLINS, A. M.,
Director of the Observatory.

GEORGE A. BARTON, PH. D.,
Lecturer on Bible Languages.

WILLIAM DRAPER LEWIS, PH. D.,
Instructor in Political Science.

WILFRED P. MUSTARD, PH. D.,
Instructor in Latin.

HENRY S. PRATT, PH. D.,
Instructor in Biology (David Scull Foundation).

JAMES A. BABBITT, A. B.,
Instructor in Physical Training.

RUFUS M. JONES, A. M.,
Instructor in Philosophy.

EMORY R. JOHNSON, PH. D.,
Instructor in Social Science.

LESLIE A. BAILEY, A. B.,
Assistant in the Library.

EUGENE C. LEWIS,
Secretary of the College.

Graduate Students.

BAILEY, LESLIE ADELBERT, A. B. (Haverford, 1893),
Dresden, Me.
Major Subject—Greek.

DAKIN, FRANKLIN A., A. B. (Harvard, 1882),
Natick, Mass.
Major Subject—Latin.

DAVIS, FRANCIS F., S. B. (Haverford, 1893),
Lansdowne, Pa.
Haverford Fellow.
Major Subject—Mathematics.

HASTINGS, WILLIAM W., A. B. and A. M. (Maryville, 1886 and 1892),
Graduate Union Theological Seminary.
West New Brighton, S. I., N. Y.
Major Subject—Semitic Languages.

KIRK, MAHLON Z., S. B. (Penn, 1893),
Bangor, Iowa.
Penn Fellow.
Major Subject—Chemistry.

SPAID, ARTHUR R., A. B. (Wilmington, 1893),
Concord, W. Va.
Wilmington Fellow.
Major Subject—History.

THOMAS, GEORGE, S. B. (Haverford, 1891),
Whitford, Pa.
Major Subject—Metallurgy.

WILSON, EDWIN MOOD, A. B. (Guilford, 1892), A. B. (University
of North Carolina, 1893),
Lenoir, N. C.
Major Subject—English.

SENIOR CLASS.

Beyerle, George Albert,	<i>Bernville, Pa.,</i>	Arts and Science.
Chase, Oscar Marshall,	<i>Hazleton, Pa.,</i>	Mechanical Eng.
Collins, Charles,	<i>Purchase, N. Y.,</i>	Arts and Science.
Comfort, William Wistar,	<i>Germantown, Pa.,</i>	Arts and Science.
Conard, Henry Shoemaker,	<i>Lansdowne, Pa.,</i>	Scientific.
De Cou, John Allen,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Farr, Clifford Bailey,	<i>Wenonah, N. J.,</i>	Arts and Science.
Greene, Kane Stovell,	<i>Philadelphia, Pa.,</i>	Scientific.
Harvey, Anson Burlingame,	<i>Pittsburgh, Pa.,</i>	Scientific.
Haughton, John Paul,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Hughes, James Edward,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Quimby, Edward Entwisle,	<i>Philadelphia, Pa.,</i>	Scientific.
Rex, Frank Clayton,	<i>Pottstown, Pa.,</i>	Arts and Science.
Ristine, Frederick Pearce,	<i>Bryn Mawr, Pa.,</i>	Arts and Science.
Scarborough, Henry Wismer,	<i>Carversville, Pa.,</i>	Scientific.
Stokes, Francis Joseph,	<i>Germantown, Pa.,</i>	Arts and Science.
Taber, David Shearman, Jr.,	<i>Greenwich, Conn.,</i>	Arts and Science.
Williams, Parker Shortridge,	<i>Wynnewood, Pa.,</i>	Arts and Science.

Lewis, Eugene C.,	<i>West Chester, Pa.</i>	
Morris, Samuel Wheeler,	<i>Philadelphia, Pa.</i>	
Strawbridge, William Justus,	<i>Germantown, Pa.</i>	

JUNIOR CLASS.

Bettle, Samuel,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Blanchard, Edmund, Jr.,	<i>Bellefonte, Pa.,</i>	Arts and Science.
Brown, Samuel Hulme,	<i>Germantown, Pa.,</i>	Arts and Science.
Conklin, Frank Henry,	<i>Brooklyn, N. Y.,</i>	Arts and Science.
Cookman, Charles Howland,	<i>Wilmington, Del.,</i>	Arts and Science.
Dean, George Brookhouse,	<i>Cincinnati, O.,</i>	Scientific.
Engle, James Linton,	<i>Haddonfield, N. J.,</i>	Arts and Science.
Evans, Joseph Spragg, Jr.,	<i>West Chester, Pa.,</i>	Arts and Science.
Gardner, Larner Somers,	<i>Atlantic City, N. J.,</i>	Scientific.
Goodman, William,	<i>Cincinnati, O.,</i>	Mechanical Eng.
Hay, Erroll Baldwin,	<i>Philadelphia, Pa.,</i>	Scientific.
Leeds, John Bacon,	<i>Seal, Pa.,</i>	Scientific.
Lippincott, George,	<i>Wyncote, Pa.,</i>	Arts and Science.
Palmer, Louis Jaquette,	<i>West Chester, Pa.,</i>	Arts and Science.
Taylor, Charles Clifford,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Thomas, Allen Curry,	<i>Philadelphia, Pa.,</i>	Scientific.
Thomas, Henry Evan,	<i>Philadelphia, Pa.,</i>	Scientific.
Webster, Walter Coates,	<i>West Grove, Pa.,</i>	Scientific.

Hay, Arthur Moorhead,	<i>Philadelphia, Pa.</i>
Hilles, William Smedley,	<i>Frankford, Pa.</i>
Morris, Alfred Paul,	<i>Pottstown, Pa.</i>

SOPHOMORE CLASS.

Adams, Douglas Howe,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Bettle, William Henry,	<i>Camden, N. J.,</i>	Mechanical Eng.
Brinton, Howard Futhey,	<i>West Chester, Pa.,</i>	Arts and Science.
Brooke, Mark,	<i>Radnor, Pa.,</i>	Scientific.
Coca, Arthur Fernandez,	<i>Wayne, Pa.,</i>	Arts and Science.
Deuell, George Henry,	<i>Bangall, N. Y.,</i>	Arts and Science.
Field, Thomas Yardley, Jr.,	<i>Wayne, Pa.,</i>	Scientific.
Haines, Thomas Harvey,	<i>Westtown, Pa.,</i>	Arts and Science.
Harris, Henry John,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Huey, Robert, Jr.,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Lester, John Ashby,	<i>Westport, Mo.,</i>	Arts and Science.
Maier, Paul D. I.,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Middleton, Samuel,	<i>Wilmington, Del.,</i>	Mechanical Eng.
Okie, Richardson Brognard,	<i>Berwyn, Pa.,</i>	Mechanical Eng.
Scattergood, Joseph Henry,	<i>Philadelphia, Pa.,</i>	Arts and Science.
Webster, Homer J.,	<i>Quaker City, O.,</i>	Scientific.
Wood, L. Hollingsworth,	<i>Mt. Kisco, N. Y.,</i>	Arts and Science.

Alsop, William Kite,	<i>Haverford, Pa.</i>
Brecht, Samuel Kriebel,	<i>Worcester, Pa.</i>
Clauser, Milton,	<i>Haverford, Pa.</i>
Hartley, Albert Dempsey,	<i>Camden, N. J.</i>
Way, Marshall Warren,	<i>West Chester, Pa.</i>

FRESHMEN CLASS.

Barns, Jesse Battey,	<i>Milford, Mass.,</i>	Arts and Science.
Beidelman, Prescott Burton,	<i>Little Rock, Ark.,</i>	Scientific.
Burns, William John,	<i>Bryn Mawr, Pa.,</i>	Scientific.
Collins, Alfred Morris,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Darlington, Morton Pennock,	<i>Norway, Pa.,</i>	Arts and Science.
Detwiler, Frank Hughes,	<i>Norristown, Pa.,</i>	Scientific.
Edwards, Ernest Russell,	<i>Hastings, Neb.,</i>	Mechanical Eng.
Field, Elliot,	<i>Wayne, Pa.,</i>	Arts and Science.
Higgins, Frank Burton,	<i>Vassalboro, Me.,</i>	Scientific.
Howson, Charles Henry,	<i>Wayne, Pa.,</i>	Arts and Science.
Hume, John Elias,	<i>Philadelphia, Pa.,</i>	Scientific.
Jacobs, Francis Brinton,	<i>West Chester, Pa.,</i>	Scientific.
Maxfield, Francis Norton,	<i>Amesbury, Mass.,</i>	Arts and Science.
McCrea, Roswell Cheney,	<i>Norristown, Pa.,</i>	Arts and Science.
Nason, Charles Dickens,	<i>Philadelphia, Pa.,</i>	Scientific.
Rhoads, William Gibbons,	<i>Germantown, Pa.,</i>	Scientific.
Rodney, Warren Brown,	<i>Broomall, Pa.,</i>	Arts and Science.
Thacher, Frank William,	<i>Florence, N. J.,</i>	Scientific.
Thomas, Edward,	<i>Haverford, Pa.,</i>	Arts and Science.
Towle, Clifton Augustus,	<i>Winthrop, Me.,</i>	Arts and Science.
Watkins, James C. T.,	<i>Baltimore, Md.,</i>	Arts and Science.

Chalfant, Thomas Marshall,	<i>Kennett, Pa.</i>
MacAfee, William Hanson,	<i>Ardmore, Pa.</i>

SUMMARY.

Graduate Students,	8
Seniors,	21
Juniors,	21
Sophomores,	22
Freshmen,	23
	—
	95

Admission.

CANDIDATES for admission to the Freshman Class in the COURSE IN ARTS AND SCIENCE will be examined as to their proficiency in the following requisites :

GREEK.—A thorough knowledge of the Grammar, including scanning of hexameter verse: Xenophon's *Anabasis*, four books; Homer's *Iliad*, three books; sight reading from Xenophon and Homer; Jones's *Greek Composition*, twenty-five Exercises to be written with the accents.

LATIN.—Cæsar's *Gallie War*, four books; Vergil's *Æneid*, six books; Cicero, six orations. Sight reading from Cicero, Cæsar, and Nepos. General questions on grammar, prosody, history, and mythology suggested by the text. Translation of easy prose from English into Latin; Harkness, Parts I. and II., or Jones's Exercises will indicate the amount necessary.

NOTE.—Equivalents in Greek and Latin will be accepted. Much importance is attached to ability to read at sight matter not previously studied.

MATHEMATICS.—Arithmetic, including the Metric System; Algebra, through Radicals and Quadratic Equations; Plane Geometry.

ENGLISH.—Grammar; a short English Composition, correct in spelling, punctuation, and expression. The subject will be drawn in 1894 from Macaulay's two *Essays on Dr. Johnson*, Scott's *Lady of the Lake*, and Thackeray's *English Humorists*; in 1895 from Longfellow's *Evangeline*; Carlyle's *Essay on Sir Walter Scott*, and Thackeray's *Four Georges*; and in 1896 from Macaulay's *Warren Hastings*; Irving's *Bracebridge Hall*; and Tennyson's *Elaine*.

NOTE.—Other work of equal merit and extent will be accepted as equivalent.

HISTORY.—Greek, Roman, and United States History.

MODERN LANGUAGES.—In place of the Greek the candidate may offer *both* German and French as follows:

German.—A thorough knowledge of the Grammar, ability to read at sight ordinary prose or poetry, and to translate English sentences into German. The minimum amount to be read may be indicated by Whitney's *German Reader*, or Boisen's *German Prose*, Schiller's *Wilhelm Tell*, and a connected piece of prose like Storm's *Immensee* or Eichendorff's *Aus dem Leben eines Taugenichts*.

French.—A thorough knowledge of the Grammar: ability to read at sight ordinary prose or poetry, and to translate English sentences into French. The minimum amount to be read may be indicated by Super's *French Reader*, Erckmann-Chatrian's *Madame Thérèse*, Sandeau's *Mlle. de la Seiglière*.

NOTE.—Equivalents in German and French will be accepted.

Candidates for admission to the Freshman Class in the SCIENTIFIC or ENGINEERING COURSE will be examined as follows:

LATIN.—As above.

MATHEMATICS.—As above, with the addition of the Properties and the Use of Logarithms.

ENGLISH.—As above.

HISTORY.—As above.

SCIENCE.—The elements of Physics, and Martin's *Human Body*, *Briefer course*, or an equivalent.

MODERN LANGUAGES.—*Both* German and French, as outlined above may be substituted for the Latin of this course. This is advised in the Engineering Course.

The certificates of principals of first-class schools will, at the discretion of the President, be accepted in place of entrance examinations. Blank forms will be furnished on application. Certificates of private tutors will not be accepted.

Students not candidates for a degree may, at the discretion of the Faculty, be admitted to pursue special courses, for proficiency in

which certificates may be granted ; but this permission will be given only to students of sufficient age, ability, and diligence to insure their success.

Candidates may be admitted to advanced classes if found on examination thoroughly fitted in all the regular studies of the course up to the point at which they enter.

Each candidate must forward, together with his application, a certificate of good moral character from his last teacher ; and students from other colleges must present certificates of honorable dismissal in good standing.

APPLICATIONS FOR ADMISSION must be made to the President. Entry blanks will be furnished on application. Rooms are assigned to old students in the order of seniority, and to new students in the order in which these entry blanks, properly filled up, are received at the President's office. Candidates will present themselves at Founders' Hall, for examination by the Faculty, *at 9.30 o'clock on the morning previous to Commencement Day*, or *at 9.30 o'clock on the morning previous to the beginning of the College Year*.

Expenses.

WITH the exceptions noted in the two following paragraphs, the price of Board and Tuition for undergraduates in the College Halls together with fuel, lights, furniture,* and service is five hundred dollars (\$500) a year.

There are a few large rooms in Barclay Hall, each of which may be taken by one student at an increased cost of twenty-five dollars a year.

A few students will be taken in Founders' Hall. The charge will be \$400 for Board and Tuition.

The charge for Tuition is one hundred and fifty dollars (\$150) a year; for Tuition and mid-day meal, two hundred dollars (\$200) a year.

The College Laundry makes a reasonable charge for washing.

Students furnish their own books and stationery, and are charged for materials consumed and breakage in the Laboratories.

The charge for Board and Tuition for Graduate Students is three hundred dollars (\$300); for Tuition alone, one hundred dollars (\$100).

Bills for Board and Tuition are payable one-half at the beginning and one-half at the middle of the College year.

* Students furnish their own towels and napkins. It will also be advisable in many cases to supply the study-room furniture.

Undergraduate Scholarships.

A FEW scholarships, varying in amount from \$100 to \$500, are at the disposal of the College.

These will be granted annually to properly qualified students who cannot afford to pay the full charges. In awarding the scholarships, both character and intellectual preparation are taken into account. Students should send, with their application, certificates of moral character. The intellectual preparation is tested by examination. Blank forms on which the application must be written will be furnished by the President of the College. Candidates are advised to apply at an early date.

Fellowships.

THERE are four Graduate Fellowships of sufficient value to cover the whole charge for Board and Room Rent. By the conditions of the donors, one of these will be given to a graduate of each of the following Colleges, viz. : Haverford, Earlham, Penn, and Wilmington ; *Provided*, that the student shall be recommended by the President of the College at which he graduated as likely to profit by the instruction given at Haverford, and that he shall be satisfactory to the Faculty of Haverford College.

Should there not be satisfactory applications for these fellowships by Fourth month 1st, they may be otherwise disposed of.

Courses of Instruction.

IN the Course in Arts and Science, Latin and Mathematics are required through two years. Should the student present Greek for admission, he is required to continue it for two years, and take German and French for one year. Should he present German and French for admission, he is required to continue them for two years. All these subjects may be continued as electives. Some election is allowed in the Junior year. The Senior year is largely elective.

In the Scientific Course, Latin is required one year (unless the student presents German and French for admission), and Mathematics two years. Particular attention is given to the Modern Languages and the Sciences throughout the course. Electives may be taken as in the course in Arts and Science.

In the Mechanical Engineering Course, the Freshman year is nearly the same as in the Scientific Course. After this there is divergence, the Engineering student taking more Mathematics, Mechanics, Shop Work, and Drawing as required studies.

Scripture and Themes are required of all undergraduate students.

In the Elective Course in the two upper years, which are taken with the advice and consent of the Faculty, students are expected to select studies having some relation to each other. In many cases it is desirable to concentrate the work in one department. The "Honor System" (see page 36) will promote this object.

Course in Arts and Science.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.

2. *Mathematics*. Sharpless's *Geometry*; Hall and Knight's *Higher Algebra*; Oliver, Wait, and Jones's *Trigonometry*; Geometrical Conic Sections. Four hours a week.

3. *Greek*. (See note below.) Lysias, *Select Orations*; Herodotus, *Selections*; Homer, *Selections*; Translation at sight; Greek Composition. Four hours a week.

4. *Latin*. Cicero, *De Senectute*; Livy, Bk. xxi; Vergil, *Aeneid* Bks. vii, viii, ix; Translation at sight; Prose Composition. Four hours a week.

5. *Rhetoric, Composition, and English Literature*. *Principles of Rhetoric* (A. S. Hill); Readings in English Prose; Lectures on English Literature; Themes. Two hours a week.

6. *Biology*. Physiology; Botany. Two hours a week.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission will take elective studies in German or French.

NOTE.—Students who have already taken Elementary Physiology may elect the Biology given in the Scientific Course.

SOPHOMORE CLASS.

1. *Scripture*. The New Testament in Greek, Luke's Gospel. One hour a week.

2. *Mathematics*. Smith's *Analytical Geometry*; Introductory *Calculus*. Three hours a week.

3. *Greek*. (See note below.) Plato *Apology* and *Crito*, or *Phaedo*; Æschylus, *Prometheus*; Aristophanes, *Frogs*; Lectures; Translation at sight (Xenophon, *Memorabilia*); Dictation Exercises in writing Greek. Three hours a week.

4. *Latin*. Cicero, *Second Philippic*; Pliny, *Selected Letters*; Horace, *Odes* and *Epodes*; Translation at sight; Prose Composition. Three hours a week.

5. *History*. Outlines of Ancient History; Mediæval History (Text-Book and Lectures). Two hours a week.

6. *Physics*. Stewart's *Lessons*, with Experimental Lectures, three hours a week, and Laboratory Work, two and one-half hours a week, the first half-year.

7. *Chemistry*. Elementary General Chemistry, three hours a week, and Laboratory Work, two and one-half hours a week, the second half-year.

NOTE.—Instead of 3, those presenting Modern Languages in place of Greek for admission to the Freshman Class will take elective courses in German and French.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. One hour a week.

2. *German*. (For those who have not studied the language.) Joynes-Meissner's *Grammar*; Niebuhr's *Heroengeschichten*; Boisen's *Prose Extracts*; Translations at sight; Exercises in translating English into German. Four hours a week the second half-year.

3. *French*. (For those who have not studied the language.) Whitney's *Grammar*, Part I; Knapp's *French Readings*; Erckmann-Chatrian's *Madame Thérèse*; Translations at sight; Composition (Whitney's *Grammar*, Part II). Four hours a week the first half-year.

4. *Political Science*. Political Economy; Principles of Constitutional Law (Text-Book and Lectures). Two hours a week.

5. *Philosophy*. Logic and Psychology. Two hours a week.

6. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 27-30 enough to make 15 hours per week with their required studies. One course of Latin, Greek, or Mathematics must be taken.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Epistles of Paul. One hour a week.

2. *Ethics*. Two hours a week.

3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 27-30 enough to make 15 hours per week with their required studies.

Scientific Course.

FRESHMAN CLASS.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.
2. *Mathematics*. Sharpless's *Geometry*; Hall and Knight's *Higher Algebra*; Oliver, Wait, and Jones's *Trigonometry*; Geometrical Conic Sections; Greaves' *Statics*; Loney's *Dynamics*; *Surveying*, with Field Practice. Six hours a week.
3. *Latin*. Cicero, *De Senectute*; Livy, Bk. xxi; Vergil, *Æneid*, Bks. vii, viii, ix; Translation at sight; Prose Composition. Four hours a week.

NOTE.—Students presenting for admission Modern Languages in place of Latin will take advanced work in German and French instead of the Latin mentioned above.

4. *Rhetoric, Composition, and English Literature*. *Principles of Rhetoric* (A. S. Hill); Readings in English Prose; Lectures on English Literature; Themes. Two hours a week.
5. *Biology*. General Zoology. General Botany. One recitation and one afternoon in the Laboratory each week.
6. *Drawing*. Five hours a week.

SOPHOMORE CLASS.

1. *Scripture*. Luke's Gospel. One hour a week.
2. *Mathematics*. Smith's *Analytical Geometry*; Introductory *Calculus*. Three hours a week.
3. *German*. Joynes-Meissner's *Grammar*; Niebuhr's *Heroengeschichten*; Boisen's *Prose Extracts*; Translation at sight; Exercises in translating English into German. Three hours a week.
4. *French*. Whitney's *Grammar*, Part I; Knapp's *French Readings*; Erckmann-Chatrian's *Madame Thérèse*; Composition; Translations at sight. Three hours a week.

NOTE.—Students presenting for admission Modern Languages in place of Latin will take advanced work in German and French instead of that outlined above.

5. *History*. Outlines of Ancient History; Mediæval History. (Text-book and Lectures.) Two hours a week.
6. *Physics*. Stewart's *Lessons*, with Experimental Lectures, three hours a week, and Laboratory Work, two and one-half hours a week the first half-year.

7. *Chemistry*. Elementary General Chemistry, three hours a week, and Laboratory Work, two and one-half hours a week the second half-year.

8. *Biology*. Invertebrate Morphology; Lectures and Laboratory Work. One recitation and one half-day in the Laboratory each week.

JUNIOR CLASS.

REQUIRED STUDIES.

1. *Scripture*. Life and Teachings of Christ. One hour a week.

2. *German*. Lessing's *Minna Von Barnhelm*; Eichendorff's *Aus dem Leben eines Taugenichts*; Goethe's *Iphigenie*; Exercises in German Composition. Three hours a week.

3. *French*. *Historiettes Modernes II*; Sandeau's *Mlle. de la Seiglière*; Lamartine's *Graziella*; Labiche's *Le Voyage de M. Perrichon*; Sand's *La Mare au Diable*; Augier's *Le Gendre de M. Poirier*; Coppée's *Le Luthier de Crémone*; Daudet's *Contes*; Translations at sight; Composition. Three hours a week.

NOTE.—Students who have had two years in French and German may take studies from the elective list in their place.

4. *Political Science*. Political Economy; Principles of Constitutional Law. (Text-books and Lectures.) Two hours a week.

5. *Philosophy*. Logic and Psychology. Two hours a week.

ELECTIVE STUDIES.

(Two to be selected.)

1. *Pure Mathematics*. Smith's Analytical Geometry of Three Dimensions; Calculus. Three hours a week.

2. *Applied Mathematics*. Introduction to Analytical Mechanics, including Attraction and Potential. Three hours a week.

3. *Chemistry*. General and Analytical Chemistry; Lectures and Laboratory Work. Three hours a week.

4. *Physics*. Heat or Electricity; Experimental Lectures. Three hours a week.

5. *Biology*. Vertebrate Morphology; General Embryology. Three hours a week.

SENIOR CLASS.

REQUIRED STUDIES.

1. *Scriptures*. Life and Teachings of Christ. One hour a week.

2. *Ethics*. Two hours a week.

3. *Themes*.

ELECTIVE STUDIES.

Students will elect from the list on pages 27–30 enough to make 15 hours per week with their required studies.

SECOND YEAR.

First Half-Year.

Histology,	5	hours.
Mammalian Anatomy,	5	"
Chemistry,	7½	"
Physics,	5½	"
Geology,	2	"
Psychology,	2	"
English,	2	"

Second Half-Year.

Embryology,	5	hours.
Osteology,	5	"
Chemistry,	7½	"
Physics,	7½	"
Logic,	2	"
English or History,	2	"

Scripture and Themes are required throughout.

Elective Courses.

Seniors and Juniors will elect from the following list, with the approbation of the Faculty, sufficient to make up the required number of hours.

GREEK.

- I. History of Greek Literature. Lectures; Selections for Reading.

[Prof. Gifford. 3.]*

- II. Selections from the Greek Orators; Æschylus; Pindar; Lectures on Greek Art and Antiquities.

[Prof. Gifford. 3.]

- III. Sophocles; Euripides; Thucydides; Dictation exercises in writing Greek.

[Prof. Gifford. 3.]

Courses I and II are given in alternate years.

LATIN.

- I. The principal Satires of Horace and Juvenal; Selections from Lucretius and Catullus; Tacitus, *Annals*, Bks. i-iv.

[Dr. Mustard. 3.]

- II. Horace, *Epistles*; Vergil, *Bucolics* and *Georgics*, Bks. i, ii, iv; Sallust, *Catiline*; Terence, *Adelphoe*; Plautus, *Captivi*.

[Dr. Mustard. 3.]

ENGLISH.

- I. ANGLO-SAXON.—Bright, *Anglo-Saxon Reader*; Cynewulf's *Elene*; Lectures.

[Dr. Gummere. 2.]

- II. ENGLISH LITERATURE IN THE FOURTEENTH CENTURY.—Chaucer's *Canterbury Tales*. Lectures.

[Dr. Gummere. 1.]

* These figures represent the number of hours per week. In Laboratory Work, etc., two and a half hours count as one.

III. SHAKSPERE.—*Lear, Hamlet, Tempest, As You Like It*; Private Readings; Lectures on Elizabethan Poetry. [Dr. Gummere. 2.]

IV. ADVANCED ENGLISH COMPOSITION.—Exercises in Composition; Discussion of special work; Readings in English Prose. [Dr. Gummere. 1.]

Only those who have attained good rank in themes for the Freshman and Sophomore Years will be admitted to this class. Members of it will be exempted from regular theme work.

V. ENGLISH LITERATURE OF THE EIGHTEENTH AND NINETEENTH CENTURIES.—Selections from Representative Authors; Lectures; Private Readings. [Dr. Gummere. 2.]

Courses II and V will be omitted in 1894-95.

GERMAN.

I. MIDDLE-HIGH GERMAN.—Paul, *Mittelhochdeutsche Grammatik*. Selections from the Poems of Walther von der Vogelweide. *Das Niebelungenlied*. [Dr. Gummere. 2.]

II. GOETHE AND SCHILLER.—*Faust; Wallenstein*; Selected Poems; History of German Literature; Exercises in German Composition. [Dr. Gummere. 3.]

III. Lessing's *Minna von Barnhelm*; Selections from German Prose; Exercises in German Composition. [Dr. Gummere. 3.]

FRENCH.

I. Moliere; Hugo; History of French Literature from the beginning to the Seventeenth Century.

II. Blouët's *L'Eloquence de la Chaire Française*; Corneille's *Le Cid, Polyucte*; Racine's *Alhtalie, Esther*; Voltaire's *Zaïre*; Crane's *Le Romantisme Français*; Hugo's *Hernani*; Balzac's *Eugénie Grandet*; History of French Literature (XVII-XIX Centuries); Composition.

III. Historiettes Modernes II; Sandeau's *Mlle. de la Seiglière*; Lamartine's *Graziella*; Labiche's *Le Voyage de M. Perrichon*; Sand's *La Mare au Diable*; Augier's *Le Gendre de M. Poirier*; Coppée's *Le Luthier de Crémone*; Daudet's *Contes*; Translations at sight; Composition. [Prof. Ladd. 3.]

IV. Classical Juniors may continue the study of French the second half-year. The work will be similar to III. [Prof. Ladd. 2.]

PURE MATHEMATICS.

I. Analytical Geometry of three Dimensions. Calculus.

[Prof. Morley. 3.]

This course is required of Engineering Students in their Junior year; and it is the proper course, in general, for all students who elect Pure Mathematics, in their Junior Year.

- II. Modern Methods in Geometry. [Prof. Morley. 3.]
 III. Geometric Introduction to the Theory of Covariants. [Prof. Morley. 3.]

APPLIED MATHEMATICS.

- I. Introduction to Analytical Mechanics, including Attraction and Potential. [Prof. Brown. 3.]
 II. Differential Equations (Forsyth). [Prof. Brown. 3.]
 III. Elementary Rigid Dynamics (Routh). [Prof. Brown. 3.]

HISTORY.

- I. Mediæval and Modern European History. [Prof. Thomas. 2.]
 II. Political and Constitutional History of England from the Anglo-Saxon Conquest to the Restoration. [Prof. Thomas. 3.]
 III. Political and Constitutional History of England from the Restoration to the present time. [Prof. Thomas. 3.]
 Courses II and III are intended to be given in alternate years.
 IV. American Colonial History to 1783; Europe and America during the Eighteenth Century. [Prof. Thomas. 3.]
 V. Constitutional and Political History of the United States, 1783 to 1865. [Prof. Thomas. 3.]
 Courses IV and V are intended to be given in alternate years.

PHILOSOPHY.

- History of Philosophy. [Prof. Jones. 2.]

POLITICAL AND SOCIAL SCIENCE.

- I. Political Science; the English Government, its present workings and past history; Comparative Study of existing Federal Governments; Election Laws and Political Organization; State Governments in the United States; Municipal Government in America and Europe; Lectures. [Dr. W. D. Lewis. 2.]
 II. Practical Economics; Money, the Tariff, Municipal Government, Transportation. [Dr. E. R. Johnson. 2.]

ASTRONOMY.

- I. Practical Astronomy, with Observatory Practice. [Prof. Collins. 2.]
 II. Descriptive Astronomy. (Half-year.) [Prof. Collins. 2.]

CHEMISTRY.

- I. General Chemistry; Lectures and Laboratory Work. [Dr. L. B. Hall. 2 or more.]

HAVERFORD COLLEGE.

II. Analytical Chemistry; Lectures and Laboratory Work.

[Dr. L. B. Hall. 2 or more.]

III. Organic Chemistry; Lectures and Laboratory Work.

[Dr. L. B. Hall. 2.]

BIOLOGY.

I. Invertebrate Morphology; Lectures and Laboratory Work.

[Dr. H. S. Pratt. 2.]

II. Vertebrate Morphology; Lectures and Laboratory Work.

[Dr. H. S. Pratt. 2.]

III. Embryology; Lectures and Laboratory Work. [Dr. H. S. Pratt. 3.]

Courses I and II each occupies an entire year. Course III is given as part of Course II and cannot be taken apart from it. Course II must be preceded by Course I. Course I must be preceded by a Course in General Zoology. Seniors electing Biology will be given any advanced courses they may elect. It is hoped they will pursue special investigation.

GEOLOGY.

Elementary Geology; Recitations and Field Work. (Half-year.)

[2.]

ENGINEERING.

I. Materials of Construction; Theory of the Steam Engine.

[Prof. Edwards. 2.]

II. Descriptive Geometry; Elements of Mechanism.

[Profs. Edwards and Brown. 2.]

Courses I and II will be given in alternate years.

III. Machine Design and Draughting. (Open only to Engineering Students.)

[Prof. Edwards. 2.]

IV. Practical Mechanics.

[Prof. Edwards. 2.]

PHYSICS.

I. Electricity and Magnetism; S. P. Thompson's Lessons and Emtage's Electricity and Magnetism; Lectures, Recitations, and Laboratory Work.

[Dr. Thompson. 3.]

II. Electrical Engineering; Sling's and Brooker's Electrical Engineering and S. P. Thompson's Dynamo-Electric Machinery, with Laboratory Work.

[Dr. Thompson. 2.]

III. Theory of Heat; Stewart's Heat and Clausius' Mechanical Theory of Heat, with Laboratory Work.

[Dr. Thompson. 2.]

IV. Physical Optics and Spectrum Analysis; Glazebrook's Physical Optics and Schellen's Spectrum Analysis, with Laboratory Work.

[Dr. Thompson 2.]

Lectures.

LECTURES by those outside the College Staff for the year 1892-3 were given as follows :

Robert Burns,
Homeric Readings,
Arctic Explorations,
Samuel Hilles,
Egypt,
Public Speaking,
The Italian Republics (three lectures),

Dr. W. C. Robinson.
Professor W. C. Lawton.
Professor Angelo Heilprin.
Old Students of Haverford.
James Wood, A. M.,
Professor S. S. Neff.
W. Hudson Shaw, A. M.

Grading of Students.

STUDENTS are divided, according to their grades, into five sections, A, B, C, D, E. Each student is notified of the section to which he has been assigned, but the grades are not published. Section E is composed of those who cannot be advanced to the next higher class, nor receive their Bachelor's degree. Daily recitations, hour examinations, and final examination are all used as elements in determining the standing of a student.

Advanced Degrees.

BACHELORS OF ARTS AND BACHELORS OF SCIENCE of three years' standing may take the degrees of MASTER OF ARTS or MASTER OF SCIENCE, on submitting to the Executive Committee satisfactory evidence of continued good character, and passing an examination on some literary or scientific course of study which shall receive the approbation of the Faculty and Managers.

The following are stated as adequate courses of study to be presented by candidates for a second degree. Particulars can be had on application to the President.

I. Hebrew. Mitchell's Gesenius' Hebrew Grammar, Critical and philological reading and analysis of I and II Samuel; I and II Kings. Sight reading of Genesis, unpointed (edition of Muehlau et Kautzsch, Lipsiæ, 1885).

II. Assyrian. Lyon's Assyrian Manual. Friedrich Delitzsch's Assyrische Lesestücke. Syllabare (Sb. Sc.) S. 53-75. Neuassyrische Text (S. 110, 4-121).

III. The whole of the New Testament in Greek, with the introduction to N. T. of Scrivener, and of Westcott and Hort.

IV. The whole of Thucydides, together with Grote and Curtius on the Peloponnesian War; Greek composition.

V. Twelve Tragedies of Æschylus, Sophocles, or Euripides; Greek composition.

NOTE.—A course similar to IV and V may be arranged in other Greek authors.

VI. Cicero's Tusculan Disputations (five books), De Natura Deorum and De Officiis, together with the History of Ancient Philosophy; Latin composition.

VII. Mommsen's and Merivale's Histories; the whole of Tacitus; Pliny's Letters; Latin composition.

VIII. German Literature, with translation at sight from any of the leading authors, and an essay in German.

IX. French Literature, with translation at sight from any of the leading authors, and an essay in French.

X. Greek Literature, with translation at sight from any of the leading authors, and an essay in Greek.

XI. Latin Literature, with translation at sight from any of the leading authors, and an essay in Latin.

XII. Pure Mathematics. Two of the following, or one in XII and one in XIII.

a. General Introduction to the Theory of Functions.

b. The Elliptic and Heperelliptic Functions.

c. The Theory of Plane Curves.

d. Selections from the Theory of Surfaces.

XIII. Applied Mathematics. Two of the following, or one in XII and one in XIII.

a. Attraction and Potential. Rigid Dynamics.

b. Theoretical Dynamics including Least Action, the Principal Function, La Grange's and Hamilton's Equations. Spherical Harmonics with applications.

c. Hydrostatics and Hydrodynamics.

d. Lunar and Planetary Theories.

e. Elasticity.

An elementary knowledge of the Calculus and of Analytical Geometry will be required.

XIV. Theoretical Astronomy (Computation of an Orbit—Oppolzer, Watson, or Gauss).

XV. Practical Astronomy (Chauvenet and Doolittle); Observatory Work.

XVI. Rankine's Applied Mechanics, or Rankine's Civil Engineering.

XVII. European History; Political, Constitutional, Economic.

XVIII. American History; Political, Constitutional, Economic.

Courses in History can be arranged by consultation with the Professor in charge of the department.

XIX. Ecclesiastical History. A general knowledge of the leading facts in Early Church History and an acquaintance with Greek and Latin will be required; a special subject may be selected from the following:

a. The Writings of Barnabas and Justin and the Teaching of the Twelve Apostles.

b. The Clementine and Ignatian Epistles.

c. The Ecclesiastical History of Eusebius.

XX. Germanic Philology and Literature. (One of the following to be selected):

a. *Anglo-Saxon*.—Grein's *Bibliothek der angelsächsischen Poesie*; Sweet's Edition (Early English Text Society) of the Anglo-Saxon Version of the *Cura Pastoralis*; Cook's Sievers' Anglo-Saxon Grammar. A knowledge of Gothic Grammar is required in this as in the next course.

b. *Middle High German*.—*Das Nibelungenlied*; Walther von der Vogelweide; *Gudrun*; History of Early German Literature; Old High German Grammar.

c. *Old Norse*.—A course similar to *a* and *b* can be arranged in Old Norse Literature and Philology.

XXI. English Literature. An intimate acquaintance with the authors of some characteristic epoch will be required, and a good English style, manifested in an original essay.

XXII. Physics. Any two of the following, with Laboratory work: Mechanics (Sturm); Fluid Motion (Lamb); Thermodynamics (Clausius); Electricity and Magnetism (part of Mascart and Joubert); Acoustics (Donkin); Geometrical Optics (Heath); Physical Optics (Preston).

The Laboratory work required will, in general, be along the lines of the student's reading, and will consist either in the skillful repetition of some piece of research, or in some independent work of scientific value.

XXIII. Chemistry.	} Courses in these subjects can be arranged by consultation with the Professor in charge of the department.
XXIV. Political Economy.	
XXV. Biology.	

Candidates who are examined may also be required to hand in Dissertations on topics in the field of study which they have specially investigated.

Resident Graduates, who have completed an adequate course of study, may be admitted to an examination for a second degree at the expiration of one or two years.

Graduates of other Colleges and Scientific Schools of good standing, who present satisfactory evidence of character and qualifications, will be admitted as candidates for the degree of Master of Arts. One year's residence at Haverford College will be required of all such students.

Notice of application for examination must be given to the President two months before Commencement. The examination for non-residents will be held during the last week in the Fifth month, and in no case at a later date. The fee for the Diploma of the Second Degree is Twenty Dollars; of subsequent degrees, Thirty Dollars, to be paid in all cases before the 10th of the Sixth month.

ALUMNI PRIZE FOR COMPOSITION AND ORATORY.

THE Association of the Alumni, in the year 1875, established an ANNUAL PRIZE, either of a Gold Medal or of an equivalent value in Books and a Bronze Medal, for excellence in Composition and Oratory.

The following are the rules governing the competition:

I. The Alumni Medal is offered yearly to the competition of the members of the Senior and Junior Classes, as a prize for the best delivered oration prepared

therefor. The oration to be handed in to the Professor of English not later than Twelfth month first.

II. Three or five Judges shall be appointed from year to year by the Alumni Committee, who shall, on the evening of the last evening but one before the winter vacation, hear publicly, in Alumni Hall, all competitors who may be qualified to appear.

III. No oration shall occupy in delivery more than fifteen minutes.

IV. In making their award, while due weight is given to the literary merits of the oration, the Judges are to consider the prizes as offered to encourage more especially the attainment of excellence in elocution.

V. The Judges shall have the right to withhold the prize if the elocution and the literary merits of the oration fall below a suitable standard of excellence.

PRIZES FOR SYSTEMATIC READING.

Two prizes, of \$60 and \$40, respectively, will be given to those members of the Junior Class who, having creditably pursued their regular studies and paid proper attention to physical culture, shall have carried on the most profitable courses of reading of standard authors during the Sophomore and Junior years.

The direction of the work and the decision as to the award of the prizes shall be in the hands of a committee consisting of the President, the Librarian, and the Professor of English.

Either or both prizes may be omitted if, in the judgment of the committee, the work done does not justify the award.

THE CLASS OF 1870 PRIZE IN ENGLISH COMPOSITION.

This Prize, of the value of \$50, is offered under the following conditions: The competitors shall be members of the Senior or Junior Class. The standard of merit is excellence in composition, with chief regard to subject-matter, originality, and a clear, forcible, and correct style. Unless definite subjects should be announced, the writers are at liberty to choose their own; but such a choice must be submitted to the approval of the President of the College. The papers should not exceed the limits of an ordinary short essay, and should excel as much in harmonious proportion of material as in particular points of style. All essays must be submitted, by

Fifth month 1st, to a committee to be appointed by the Class of 1870. The Prize is to be announced on the night of the Alumni oration and at Commencement, and is to be recorded in the College Catalogue.

HONORS.

For the purposes of Honors studies are divided as follows :

- I. Ancient Languages and Literature.
- II. Modern Languages and Literature.
- III. Mathematics, Physics, and Astronomy.
- IV. Chemistry and Biology.
- V. History, Philosophy, and Political Science.
- VI. Latin and French.
- VII. Chemistry and Physics.

Students candidates for Honors shall elect from one group at least five hours per week during the Junior year, and eight hours per week during the Senior year, and shall make their announcements of candidacy at the beginning of the Junior year.

First and second Honors may be given, dependent on the judgment of the Professors immediately interested, to be decided by special examination or otherwise.

Honors shall be announced at Commencement and in the succeeding catalogue.

Library.

LIBRARIAN, Professor Allen C. Thomas; ASSISTANT, Leslie A. Baily.

THE number of bound volumes in the Library of Haverford College is 29,275. Numerous American and European periodicals, scientific and literary, are taken by the Library.

Through the liberality of friends of the College the theological and miscellaneous library of the late Gustav Baur, for many years Professor of Theology in the University of Leipsic, was bought and given to the College in 1889. It consists of 6,635 volumes, besides several thousand pamphlets. It is rich in theology, Oriental languages, and in German literature. It has been classified, and a card catalogue prepared.

About \$1,800 yearly are expended for the purchase of books and periodicals.

The Library is open as a reading-room from 9.15 A. M. to 8 P. M., during which time the volumes in the alcoves may be freely consulted. The Librarian devotes stated hours each week to the purpose of assisting and directing students in their reading, and in the intelligent use of books of reference and of authorities. He also arranges courses of reading.

Chemical Laboratory.

DIRECTOR, Dr. Lyman B. Hall; ASSISTANT, Edward E. Quimby.

THE Laboratory Work comprises elementary experiments in General Chemistry; an extended study of the more important elements and their compounds; qualitative and quantitative analysis; the preparation of pure compounds; and experimental work illustrating chemical laws and theories.

Students may substitute for the last two years of the Scientific Course a special course in Chemistry, embracing both theory and laboratory work.

Opportunity is given for elementary or advanced special work, with ample facilities for its prosecution.

Physical Laboratory.

DIRECTOR, Dr. J. O. Thompson; ASSISTANT, Henry W. Scarborough.

THE Physical Laboratory occupies five medium-sized rooms, and is well equipped for work in the different departments of Physics. The apparatus has been selected with especial reference to quantitative rather than qualitative work, and includes in every department exact standards. The department of electricity has been exceptionally well equipped, and additions are gradually being made to the apparatus in all departments.

The students are instructed in the accurate measurement of various physical quantities in mechanics, heat, light, and electricity. They are also assigned a certain amount of qualitative work leading up to a more intimate knowledge of the properties of matter.

The work of the more advanced students is supplemented by reading in the foreign and domestic scientific journals which are accessible in the Library.

Biological Laboratory.

DIRECTOR, Dr. H. S. Pratt ; ASSISTANT, J. A. Babbitt.

THE Biological Laboratory is well equipped with reagents and with microscopes and all the other necessary apparatus and appliances. It contains also about two hundred recent biological works and zoological and botanical charts.

The work consists of courses in General Zoology and Botany, followed by thorough courses in invertebrate and vertebrate anatomy, in histology and embryology.

Students who have completed the courses prescribed may elect advanced work or carry on special investigations.

Museum.

CURATOR, Dr. H. S. Pratt.

ORNITHOLOGY, Mineralogy, Geology, Conchology, Paleontology, and Invertebrate Zoology are well represented. The Herbarium contains about 3,000 species, many of which are foreign. Specimens in each department are classified and catalogued, and are used by lecturers and students in the class-rooms and laboratories.

Mechanical Laboratory.

DIRECTOR, Professor Levi T. Edwards.

THE MECHANICAL LABORATORY occupies a commodious building erected in 1890 especially for the Engineering Department. It contains a machine shop, carpenter shop, blacksmith shop, foundry, draughting room, blue-printing room, and stock room. The machine shop contains, besides several complete sets of machinists' tools for vise work, several lathes, a planer, sharper, drill press, vises, etc. The carpenter shop contains several complete sets of carpenters' tools, wood lathes, and a band saw. The foundry and blacksmith shop are well equipped.

The instruction begins with a series of graded exercises, which teach accuracy in the use of tools and illustrate the principles of machine construction. This is followed by practice in the construction of parts of machinery and the building of complete machines.

The students, under the care of the Director, are taken from time to time to visit machine shops and engineering constructions in Philadelphia and vicinity.

Astronomical Observatory.

DIRECTOR, W. H. Collins.

THE HAVERFORD OBSERVATORY affords the students the means of becoming familiar with the use of astronomical instruments, and of acquiring, from actual observation, a practical acquaintance with Astronomy.

It contains two Equatorial Telescopes, one by Clark, having an object-glass 10 inches in diameter, and one with an object-glass of $8\frac{1}{4}$ inches, with filar micrometer and eye-pieces; a polarizing eye-piece; a Newtonian Reflector, with a silver-on-glass speculum of $8\frac{1}{4}$ inches diameter; a Prism Spectroscope; a Meridian Transit Circle having a Telescope of $3\frac{3}{4}$ inches aperture, with a circle at each end of the axis 26 inches in diameter; a Zenith Instrument of $1\frac{3}{4}$ inches aperture, with a micrometer; two Sidereal Clocks, one with mercurial compensation, the other used to connect with a Bond's Magnetic Chronograph.

The latitude of the observatory is $40^{\circ} 0' 40''$ N. ; its longitude, 6 minutes 59.4 seconds East from Washington.

A Special Course in Astronomy is offered to amateurs and teachers. The requisites for the course and the fees charged will depend on the work which the applicant desires to perform.

The Gymnasium.

DIRECTOR, James A. Babbitt.

THE GYMNASIUM has just been refitted, at considerable expense, with several improved gymnastic appliances, and now includes in its equipment rowing, sculling, and wrist machines, chest-weights of recent device, striking-bag and drum, and the necessary apparatus for the gymnastic game of basket-ball.

The Director gives systematic instruction, based upon careful physical examination, and an extensive addition for this purpose has been made in the anthropometric equipment.

Required work begins Twelfth month 1st and ends Fourth month 1st, and occupies three hours each week.

It is arranged in two courses, each occupying one season.

Students entering the Freshman class are required to take the two courses, one each year; and divisions for advanced work are formed of those giving evidence of previous systematic gymnasium drill.

Students entering the Sophomore class are required to complete one course, with a similar privilege of advanced standing.

While the work is required of the two lower classes only, it is elective for the upper classes, and it is expected that the majority of the members will take advantage of the advanced courses arranged.

Societies.

THE LOGANIAN SOCIETY was established by the Officers and Students in 1834.

THE EVERETT-ATHENÆUM is a literary society of the students.

A flourishing branch of the YOUNG MEN'S CHRISTIAN ASSOCIATION exists at the College.

Degrees, Prizes, and Honors Granted in 1893.

At the Commencement in 1893 Degrees were granted after examination to the following graduates :

BACHELOR OF ARTS.

LESLIE ADELBERT BAILEY,
JOHN FARNUM BROWN,
WILBUR ALBERT ESTES,
WALTER WINCHIP HAVILAND,
CLARENCE GILBERT HOAG,
CARROL BRINTON JACOBS,

GEORGE LINDLEY JONES,
CHARLES OSBORNE,
CHARLES JAMES RHOADS,
EUGENE M. WESTCOTT,
FRANKLIN WHITALL,
GIFFORD KING WRIGHT.

BACHELOR OF SCIENCE.

FRANCIS F. DAVIS,
*ARTHUR VILLIERS MORTON,
JOHN MICKLE OKIE,
EDWARD RHOADS,

*JOHN ROBERTS,
BARTON SENSENIG,
*WILLIAM SANSON VAUX, JR.,
EDWARD WOOLMAN.

*In Mechanical Engineering.

MASTER OF ARTS.

BENJAMIN CADBURY, English.
CHARLES GILPIN COOK, Chemistry.
WALTER MORRIS HART, English.

IRVING CULVER JOHNSON, History.
LEONARD CHARLES VAN NOPPEN,
English.
STANLEY RHOADS YARNALL, Classics.

PRIZES.

The Alumni Prize for Composition and Oratory (\$50) was awarded to

EUGENE MARION WESTCOTT.

THE PRIZES FOR SYSTEMATIC READING WERE AWARDED TO

First Prize (\$60), FRANK CLAYTON REX.

Second Prize (\$40), JOHN ALLEN DE COU.

The Class of 1870 Prize in Composition (\$50) was awarded to

FRANKLIN WHITALL.

HONORS.

General Honors, { FRANCIS F. DAVIS.
CHARLES J. RHOADS.

First Honors in Mathematics, FRANCIS F. DAVIS.

Second Honors in Modern Languages, CHARLES OSBORNE.

Second Honors in Astronomy and Mathematics, . GEORGE LINDLEY JONES.

Second Honors in History and Philosophy, . . WALTER WINCHIP HAVILAND.

Second Honors in Physics, EDWARD RHOADS.

Second Honors in Engineering, WILLIAM SANSON VAUX, JR.

List of Graduates and Honorary Degrees.

(Degrees conferred by other institutions are indicated by *italics*.)

THE ONLY DEGREE GRANTED ON GRADUATION BEFORE 1877 WAS THAT OF
BACHELOR OF ARTS.

GRADUATES.

1836

Thomas F. Cock, *M.D.*, LL. D.
Joseph Walton

1837

*William C. Longstreth, * 1881
*David C. Murray, * 1885
Lindley Murray
*Benjamin V. Marsh, * 1882
*Joseph L. Pennock, * 1870
Robert B. Parsons
*Charles L. Sharpless, * 1882
*Lloyd P. Smith, A.M., * 1886
*B. Wyatt Wistar, * 1869

1838

*James V. Emlen, *M.D.*, * 1880
*John Elliott, * 1893

1839

*Frederic Collins, * 1892
Thomas P. Cope
Henry Hartshorne, *M.D.*, A.M., LL.D.
*Nereus Mendenhall, *M.D.*, * 1893
Richard Randolph, Jr., *M.D.*
*Charles Taber, * 1887

1840

*Joseph Howell, * 1889
Anthony M. Kimber
*Henry H. G. Sharpless, * 1870
*John R. Winslow, *M.D.*, * 1866

1841

*Richard H. Lawrence, * 1847
*James P. Perot, * 1872
*Elias A. White, * 1866

1842

Robert Bowne
Richard Cadbury
*William S. Hilles, * 1876
*Thomas Kimber, Jr., LL.D., * 1890
*James J. Levick, *M.D.*, A.M., * 1893
Edmund Rodman, A.M.
Thomas R. Rodman, *A.B.*
Benjamin R. Smith
Augustus Taber
Caleb Winslow, *M.D.*

1843

Robert B. Howland
Francis White
*William D. Stroud, *M.D.*, * 1883

1844

Evan T. Ellis
Robert B. Haines
Isaac Hartshorne

1845

Edmund A. Crenshaw
*Robert Pearsall, * 1849

1849

Albert K. Smiley, A.M.
Alfred H. Smiley, A.M.

1851

Joseph L. Bailey
Philip C. Garrett
Thomas J. Levick
Franklin E. Paige, A.M.

Zaccheus Test, *M.D.*, A.M.
James C. Thomas, *M.D.*, A.M.
Richard Wood

1852

Dougan Clark, *M.D.*
Lewis N. Hopkins
William L. Kinsman
William E. Newhall
James Whitall

1853

William B. Morgan, A.M.
William H. Pancoast, *M.D.*, A.M.

1854

Frederick Arthur, Jr.
John W. Cadbury
John B. Garrett
David Scull, Jr.

1855

*Samuel Bettle, * 1859
John R. Hubbard, A.M.

1856

Bartholomew W. Beesley
Joel Cadbury, Jr.
Jonathan J. Comfort, *M.D.*
*James M. Walton, * 1874
Edward R. Wood, A.M.

1857

Jesse S. Cheney, A.M.
*Cyrus Mendenhall, * 1858
Stephen Wood

1858

*Thomas H. Burgess, * 1893
Thomas Clark
Daniel W. Hunt
*Samuel T. Satterthwaite, * 1865
William G. Tyler
Thomas Wistar, A.M., *M.D.*
Ellis H. Yarnall, *LL.B.*

1859

*Richard W. Chase, * 1865
James R. Magee
*Richard C. Paxson, * 1864
*Edward Rhoads, *M.D.*, * 1871

Edward C. Sampson
*George Sampson, * 1872
Abram Sharples, *M.D.*
Benjamin H. Smith

1860

*Lindley M. Clark, * 1861
*William B. Corbit, *M.D.*, * 1882
*William M. Corlies, * 1881
Cyrus Lindley
Theodore H. Morris
Frederick W. Morris
Richard Pancoast
John W. Pinkham, *M.D.*
Francis Richardson
Clement L. Smith, A.M., *LL.D.*
James Tyson, *M.D.*, A.M.
Silas A. Underhill, *LL.B.*

1861

Edward Bettle, Jr.
*Henry Bettle, * 1886
*Charles Bettle, * 1883
William B. Broomall
Charles H. Jones
*Thomas W. Lamb, A.M., *M.D.*, * 1878
William N. Potts
Jehu H. Stuart, A.M., *M.D.*
John C. Thomas

1862

Henry T. Coates, A.M.
*Samuel A. Hadley, * 1864
Horace G. Lippincott
George B. Mellor
Horace Williams, *M.D.*
Isaac F. Wood

1863

Thomas J. Battey, A.M.
George M. Coates, Jr., A.M.
William M. Coates
*Richard T. Jones, * 1869
William H. Morris
Joseph G. Pinkham, *M.D.*, A.M.

1864

*Franklin Angell, A.M., * 1882
*William Ashbridge, *M.D.*, * 1884
Edward H. Coates
Howard M. Cooper, A.M.
Albin Garrett

Morris Longstreth, *A B., M.D., A.M.*
 Albert Pancoast
 Charles Roberts

*E. Pope Sampson, * 1893
 *Edward L. Scull, * 1884
 *Randolph Wood, * 1876

1865

John R. Bringham
 *Edward T. Brown, * 1892
 James A. Chase
 Joseph M. Downing
 Arthur Haviland
 *David H. Nichols, * 1865
 Henry W. Sharpless
 *George Smith, Jr., * 1872
 Robert B. Taber, A.M.
 Allen C. Thomas, A.M.
 Benjamin A. Vail
 Caleb Cresson Wistar

1866

A. Marshall Elliott, A.M.
 Benjamin E. Valentine, *LL.B.*

1867

*John Ashbridge, * 1881
 George Ashbridge, A.M., *LL.B.*
 William P. Clark, A.M., *LL.B.*
 Samuel C. Collins, A.M.
 Nathaniel B. Crenshaw
 Charles H. Darlington, A.M.
 *William T. Dorsey, *M.D.*, * 1870
 B. Franklin Eshleman
 Richard M. Jones, A.M., *LL.D.*
 *Charles W. Sharpless, * 1889
 Walter Wood

1868

Edward H. Cook
 *Alexis T. Cope, * 1883
 Benjamin C. Satterthwaite
 Louis Starr, *M.D.*
 S. Finley Tomlinson
 Joseph H. Wills, A.M., *M.D.*

1869

Johns H. Congdon
 Henry Cope, A.M.
 Ludovick Estes, *A.M.*
 *Henry Eval, A.M., * 1877
 *William B. Kaighn, * 1876
 Pendleton King, A.M.

William H. Randolph
 Edward B. Taylor, *M.C.E.*
 William S. Taylor
 James G. Whitlock
 Walter Wood
 Henry Wood, *Ph.D.*

1870

J. Stuart Brown
 John E. Carey
 Alford G. Coale
 Howard Comfort
 T. Allen Hilles
 William H. Hubbard, *M.D.*
 *Thomas K. Longstreth, A.M., * 1883
 Oliver G. Owen, A.M.
 Charles E. Pratt, A.M.
 David F. Rose
 *John D. Steele, * 1886
 Charles Wood, A.M.
 Stuart Wood, *Ph.D.*

1871

Henry G. Brown
 *William P. Evans, * 1893
 John S. Garrigues
 Reuben Haines, A.M.
 William H. Haines
 Joseph Hartshorne
 Jesse F. Hoskins
 Walter T. Moore
 Ellis B. Reeves
 Alfred R. Roberts, *C.E.*
 Charles S. Taylor
 Edward D. Thurston,
 Randolph Winslow, *M.D.*, A.M.

1872

Richard Ashbridge, *M.D.*
 Richard T. Cadbury, *A.B., A.M.*
 James Carey, Jr., *LL.B.*
 Thomas S. Downing, Jr.
 Walter Erben
 Thomas Roland Estes
 John E. Forsythe
 William H. Gibbons, A.M.
 Francis B. Gummere, *A.B., A.M.*,
Ph.D.
 Casper Wistar Haines, A.M., *C.E.*
 Abram Francis Huston
 *Marmaduke Cope Kimber, A.M., * 1878
 William M. Longstreth
 Richard H. Thomas, *M.D.*

1873

James C. Comfort
 Thomas P. Cope, Jr.
 George W. Emlen
 Joseph M. Fox
 Henry C. Haines
 Benjamin H. Lowry, A.M.
 Alden Sampson, A.M. *A.B.*, *A.M.*
 *Julius L. Tomlinson, A.M., * 1890

1874

Edward P. Allinson, A.M.
 John G. Bullock
 James Emlen
 Charles R. Hartshorne, *LL.B.*
 Samuel E. Hilles
 John B. Jones
 *Mahlon Kirkbride, * 1889
 Theophilus P. Price
 James B. Thompson
 Joseph Trotter

1875

Edward K. Bispham
 Alonzo Brown, A.M.
 J. Franklin Davis, A.M.
 Charles E. Haines
 William Hunt, Jr.
 Charles L. Huston
 Harold P. Newlin
 Walter W. Pharo
 Charles E. Tebbetts
 Miles White, Jr.

1876

Francis G. Allinson, A.M., *Ph.D.*
 David S. Bispham
 Reuben Colton
 Henry W. Dudley
 Seth K. Gifford, A.M.
 L. Lyndon Hobbs, A.M., *LL.D.*
 Richard H. Holme
 *Thomas William Kimber, * 1885
 Charles A. Longstreth
 J. Whitall Nicholson
 Percival Roberts, Jr.
 Frank H. Tay'or
 Howard G. Taylor
 *Lewis A. Taylor, * 1881

1877

A.B.

Isaac W. Anderson
 Frederic L. Bailly

Isaac Forsythe
 James D. Krider
 George G. Mercer, *LL.M.*, *J.C.D.*
 Wilson Townsend

S.B.

William F. Smith

1878

A.B.

Henry Bai'y, A.M.
 Albert L. Bailly
 Francis K. Carey, *LL.B.*, A.M.
 Edward T. Comfort
 Charles S. Crosman, *LL.B.*
 Samuel H. Hill
 Lindley M. H. Reynolds
 Daniel Smiley, Jr.
 Henry L. Taylor, A.M., *M.D.*
 John M. W. Thomas
 George W. White

S.B.

Jonathan Eldridge
 Edward Forsythe
 Cyrus P. Frazier, *A.B.*
 Robert B. Haines, Jr.
 Henry N. Stokes, *Ph.D.*

1879

A.B.

Samuel Bispham, Jr.
 Edward Gibbons
 John H. Gifford, *M.D.*
 Francis Henderson, *LL.B.*
 William C. Lowry
 John B. Newkirk
 John E. Sheppard, Jr., *M.D.*

1880

A.B.

Charles F. Brédé, A.M.
 Charles E. Cox
 Josiah P. Edwards
 James L. Lynch
 Samuel Mason, Jr.
 William F. Perry
 Joseph Rhoads, Jr., A.M.

S.B.

William Bishop
 Alexander P. Corbit
 Charles E. Gause, Jr.
 Edward M. Jones

1881

A.B.

William A. Blair, *A.M.*
 A. Morris Carey
 Levi T. Edwards, *A.M.*
 Edward Y. Hartshorne
 Isaac T. Johnson, *A.M.*
 Edwin O. Kennard
 Jesse H. Moore
 William E. Page
 Walter F. Price, *A.M.*, *A.M.*
 Thomas N. Winslow
 John C. Winston

S.B.

Walter Brinton
 William H. Collins, *A.M.*
 Joseph H. Cook
 Davis H. Forsythe
 Albanus L. Smith

1882

A.B.

George A. Barton, *A.M.*, *A.M.*, *Ph.D.*
 Isaac M. Cox
 Richard B. Hazard
 Wilmot R. Jones
 *Wilmer P. Leeds, *1885
 J. Henley Morgan
 Edward Randolph

S.B.

John E. Coffin
 Daniel Corbit
 George L. Crosman
 Frederic D. Jones
 T. Chalkley Palmer
 Lindley M. Winston

1883

A.B.

John B'anchard, *LL.B.*
 Frank E. Briggs
 George H. Evans
 Francis B. Stuart
 Bond V. Thomas
 Thos. K. Worthington, *LL.B.*, *Ph.D.*

S.B.

William L. Bailly
 Stephen W. Collins, *LL.B.*

D. William Edwards
 William E. Scull

*Samuel B. Shoemaker, *M.D.*, *1893
 John D. Spruance
 W. Alpheus White
 Charles H. Whitney
 Louis B. Whitney

1884

A.B.

John Henry Allen, *A.M.*
 Orren William Bates
 Thomas Herbert Chase
 William J. Haines
 Arthur D. Hall
 Charles R. Jacob
 Alfred Percival Smith, *LL.B.*

S.B.

Louis T. Hill
 Walter L. Moore
 George Vaux, Jr., *LL.B.*

L.B.

Francis A. White

1885

A.B.

Samuel Bettie
 Enos L. Doan
 William T. Ferris
 William S. Hilles
 William T. Hussey
 Arthur W. Jones, *A.M.*
 Rufus M. Jones, *A.M.*
 Joseph L. Markley, *A.M.*, *A.M.*, *Ph.D.*
 Marriott C. Morris
 Augustus T. Murray, *Ph.D.*
 Augustus H. Reeve
 William F. Reeve
 Isaac Sutton, *A.M.*, *A.M.*
 Elias H. White, *LL.B.*
 William F. Wickersham, *A.M.*

S.B.

Charles W. Bailly
 John J. Blair
 Thomas Newlin, *A.M.*
 Theodore W. Richards, *A.M.*, *Ph.D.*
 *Matthew T. Wilson, *1891

1886

A. B.

Jonathan Dickinson, Jr.
 Alexander H. Scott
 Horace E. Smith
 Edward D. Wadsworth, *LL.B.*

S.B.

*Thomas W. Betts, * 1893
 Guy R. Johnson
 William S. McFarland
 *Israel Morris, Jr., * 1891
 William P. Morris
 Alfred M. Underhill, Jr.
 Wilfred W. White

1887

A.B.

Jay Howe Adams, *M.D.*
 Edward B. Cassatt
 William H. Futrell, *LL.B.*
 Alfred C. Garrett, *A.B., A.M., Ph.D.*
 Henry H. Goddard, *A.M.*
 Willis H. Hazard
 Barker Newhall, *A.M., Ph.D.*
 Jesse E. Philips, Jr., *A.M.*
 Henry W. Stokes
 Frederic H. Strawbridge
 Richard J. White
 George B. Wood
 William C. Wood

S.B.

*Arthur H. Baily, * 1889
 Charles H. Bedell
 Allen B. Clement, *A.M.*
 Horace Y. Evans, Jr.
 Hugh Lesley
 *William W. Trimble, * 1891

B.E.

P. Hollingsworth Morris

1888

A.B.

E. Morris Cox
 Howe I S. England, *A.M.*
 Allison W. Slocum, *A.M., Ph.D.*
 Martin B. Stubbs, *A.M.*

S.B.

Charles H. Battey
 John C. Corbit, Jr.
 Morris E. Leeds
 William Draper Lewis, *LL.B., Ph.D.*
 Henry V. Gummere, *A.M., A.M.*
 Francis C. Hartshorne, *LL.B.*
 Joseph T. Hilles
 George B. Roberts
 Joseph W. Sharp

B.E.

Lawrence P. Beidelman
 Joseph E. Johnson, Jr., *M.E.*
 Frederick W. Morris, Jr.
 Richard J. Morris

1889

A.B.

Robert C. Banes
 Thomas F. Branson, *M.D.*
 Charles H. Burr, Jr., *A.M., LL.B.*
 Thomas Evans
 Warner H. Fite
 Warren C. Goodwin
 Victor M. Haughton
 Franklin B. Kirkbride
 Daniel C. Lewis
 Lawrence J. Morris
 William F. Overman
 Frank W. Peirson, *A.M.*
 Samuel Prioleau Ravenel, Jr., *LL.B.*
 Walter George Reade
 Lindley M. Stevens, *A.M.*
 John Stoddell Stokes
 *Layton W. Todhunter, * 1889
 Frederick N. Vail, *A.M.*
 Gilbert C. Wood

S.B.

William R. Dunton, *A.M., M.D.*
 Arthur N. Leeds, *A.M.*
 J. Henry Painter
 David J. Reinhardt
 Frank E. Thompson, *A.M.*

B.E.

Herbert Morris

1890

A.B.

Edward M. Angell, *LL.B.*
 James Stuart Auchincloss

William G. Audenried, Jr.
 Henry R. Bringhurst, Jr.
 Charles T. Cottrell, A.M.
 Guy H. Davies
 Robert E. Fox
 Henry L. Gilbert, A.M.
 William G. Jenkins
 Thomas S. Kirkbride, *M.D.*
 Jonathan M. Steere, A.M.

S.B.

Thomas Amory Coffin
 Percy S. Darlington
 William M. Guilford, Jr.
 John N. Guss
 Edwin J. Haley, A.M.
 Robert R. Tatnall, A.M.
 Dilworth P. Hibberd, A.M.
 Alfred C. Tevis

B.E.

John F. Taylor Lewis
 Edward R. Longstreth
 William Percy Simpson
 Ernest Foster Walton

1891

A.B.

Harry Alger
 David H. Blair
 Henry A. Todd

S.B.

William W. Handy
 Arthur Hoopes
 John Wetherill Hutton, A.M.
 David L. Mekeel, M.E.
 John Stokes Morris, A.M.
 George Thomas, 3d

1892

A.B.

Richard Brinton
 I. Harvey Brumbaugh
 Benjamin Cadbury, A.M.

Joseph Henry Dennis
 Warren H. Detwiler
 Rufus Hacker Hall
 Walter Morris Hart, A.M.
 Gilbert Joseph Palen
 Ralph Warren Stone
 W. Nelson Loflin West
 Stanley Rhoads Yarnall, A.M.

S.B.

Augustine W. Blair
 Egbert Snell Cary
 Minturn Post Collins
 Charles Gilpin Cook, A.M.
 William Pearson Jenks
 Franklin McAllister
 John Wallingford Muir
 William Hopkins Nicholson, Jr.
 William Ellis Shipley
 Joseph Remington Wood

1893

A.B.

Leslie Adelbert Bailey
 John Farnum Brown
 Wilbur Albert Estes
 Walter Winchip Haviland
 Clarence Gilbert Hoag
 Carrol Brinton Jacobs
 George Lindley Jones
 Charles Osborne
 Charles James Rhoads
 Eugene M. Westcott
 Franklin Whittall
 Gifford King Wright

S.B.

Francis F. Davis
 Arthur Villiers Morton
 John Mickle Okie
 Edward Rhoads
 John Roberts
 Barton Sensenig
 William Sansom Vaux, Jr.
 Edward Woolman

Whole number of graduates, 518.

The following graduate students have received Advanced Degrees not having been undergraduates at Haverford :

1890.

William B. Eaton, A.B., Wesleyan, 1889, A.M.
Charles L. Michener, A.B., Penn, 1884, A.M.
Charles E. Pritchard, A.B., Earlham, 1889, A.M.
William C. Sayrs, A.B., Wilmington, 1889, A.M.
Charles E. Terrell, S.B., Wilmington, 1888, A.M.
Charles H. Thurber, Ph.B., Cornell, 1886, A.M.
Robert W. Rogers, A.B., Johns Hopkins, 1887, Ph.D.

1891.

Lawrence M. Byers, A.B., Penn, 1890, A.M.
William H. Carroll, A.B., Wilmington, 1890, A.M.
Myron F. Hill, A.B., Harvard, 1890, A.M.
Lucian M. Robinson, A.B., Harvard, 1882, A.M.

1892.

Elmer H. Gifford, S.B., Penn, 1888, A.M.
Byron Charles Hubbard, S.B., Earlham, 1891, A.M.

1893.

Irving Culver Johnson, S.B., Penn, 1892, A.M.
Leonard Charles Van Noppen, A.B., Guilford, 1890, B. L., Univ.
N. C., 1892, A.M.

Honorary Degrees.

1858	1880
Hugh D. Vail, A.M.	*Thomas Chase, LTT.D., * 1892
1859	Thomas Hughes, LL.D.
*Joseph W. Aldrich, A.M., * 1865	1882
1860	Henry T. Coates, A.M.
*John G. Whittier, A.M., * 1892	1883
1864	Thomas F. Cock, LL.D.
Edward D. Cope, A.M.	James Wood, A.M.
1867	Henry N. Hoxie, A.M.
Joseph Moore, A.M.	1884
1872	*Joseph Parrish, A.M., * 1893
William Jacobs, A.M.	Elijah Cook, A.M.
1875	1885
*Samuel Alsop, Jr., A.M., * 1888	*Julius L. Tomlinson, A.M., * 1890
1876	Robert Howland Chase, A.M.
*Pliny E. Chase, LL.D., * 1886	1886
William H. Pancoast, A.M.	Edward H. Magill, LL.D.
1877	1887
John J. Thomas, A.M.	*Thomas Kimber, LTT.D., * 1890
1879	1888
Richard M. Jones, A.M.	Clement L. Smith, LL.D.
Ellis Yarnall, A.M.	1890
	Joseph John Mills, LL.D.
	1891
	Richard M. Jones, LL.D.

HOLDERS OF THE HAVERFORD FELLOWSHIP.

1889-90,	{	CHARLES H. BURR.
	{	FRANK E. THOMPSON.
1890-91,		DILWORTH P. HIBBERD.
1891-92,		DAVID LANE MEKEEL.
1892-93,		STANLEY RHODS YARNALL.
1893-94,		FRANCIS F. DAVIS.

THE FACULTY

desires to place a copy of the Annual Catalogue in the hands of every alumnus and member of the corporation. It is requested that all omissions that become known be reported to the Secretary of the College.

HAVERFORD COLLEGE STUDIES.

- No. 1.—The Library of the Convent of the Holy Sepulchre at Jerusalem;
J. Rendel Harris.
Work of Haverford College Observatory; F. P. Leavenworth.
On the Geometry of a Nodal Circular Cubic; Frank Morley.
On the Period of Rotation of the Sun; Henry Crew.
On the Symbolic Use of the Colors Black and White in Germanic Tradition; Francis B. Gummere.
- No. 2.—The Rest of the Words of Baruch; J. Rendel Harris.
Some Esarhaddon Inscriptions; Robert W. Rogers.
- No. 3.—The Passion of Perpetua; J. Rendel Harris and Seth K. Gifford.
On Some Properties of the Triangle; Frank Morley.
- No. 4.—On the Numerical Characteristics of a Cubic Curve; Charlotte Angas Scott.
On the Caustic of the Epicycloid; Frank Morley.
Sun-Spot Observations; H. V. Gummere and F. P. Leavenworth.
On a New Manuscripts of the Four Gospels; W. C. Braithwaite.
A Catalogue of Manuscript (chiefly Oriental) in the Library of Haverford College; Robert W. Rogers.
The Passion of Perpetua; translated by Seth K. Gifford.
Specimens of Uncial Lectionaries from Mount Sinai; J. Rendel Harris.
- No. 5.—The Diatessaron of Tatian, a Preliminary Study; J. Rendel Harris,
- Nos. 6 and 7.—The Apology of Aristides; J. Rendel Harris.
- No. 8.—The Codex Bezae; J. Rendel Harris.
- No. 9.—The Codex Sangallensis; J. Rendel Harris.
Unpublished Inscriptions of Esarhaddon; Robert W. Rogers.
- No. 10.—Some Interesting Inscriptions; J. Rendel Harris.
Stellar Parallax; F. P. Leavenworth.
Conform Representation by means of the β -Function; Frank Morley.
- No. 11.—Municipal Government in England; Isaac Sharpless.
Myth and Allegory; Francis B. Gummere.
Professor Ewing's Theory of Magnetism; Arthur Hoopes.
New Method of Obtaining a Constant Temperature; Henry Crew.
Errors from the Use of Decimals; Ernest W. Brown.
Parallax of Delta Herculis; F. P. Leavenworth.
Double Star and Sun-Spot Observations; F. P. Leavenworth and W. H. Collins.
- No. 12.—The Familists; Allen C. Thomas.
On the Reading of " $\tau\delta\ \pi\acute{\alpha}\sigma\chi\alpha$ " in John vi, 4; George A. Barton.
Our Lord's Quotation from the First Book of Maccabees; Albert J. Edmunds.
Parallax of θ Arg. 14320, and of δ Equilei; Francis P. Leavenworth.
Double Star Observations; William H. Collins.
Observations of Variable Stars; George L. Jones.
Observations of the Partial Eclipse of the Sun, October 20th, 1892; William H. Collins.

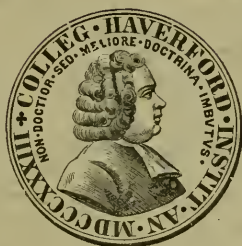
PRICE, ONE DOLLAR PER NUMBER.

Other numbers will appear as material accumulates.

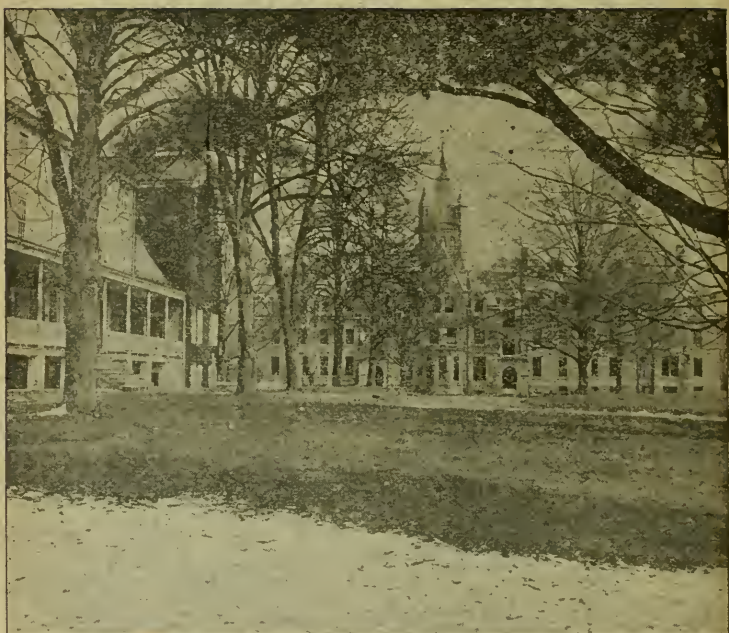
For copies address

The Secretary of Haverford College,
Haverford P. O., Pa.

HAVERFORD COLLEGE.



1894-95.



CATALOGUE

OF

HAVERFORD COLLEGE

(HAVERFORD P. O., PA.)

1894-95.



PHILADELPHIA :

PRESS OF FRANKLIN PRINTING COMPANY,

516 MINOR STREET.

CALENDAR.

College Year 1894-95 began	9th Mo. 26
Winter Recess begins	12th Mo. 21
Winter Term begins, 1895*	1st Mo. 3
Mid-year Examinations begin	1st Mo. 23
Second Half-year begins	2d Mo. 1
Junior Exercises	4th Mo. 10
Spring Recess begins	4th Mo. 11
Spring Term begins*	4th Mo. 23
Alumni Meeting	6th Mo. 12
Examinations for Admission, 9.30 A. M.	6th Mo. 13
Senior Class Day	6th Mo. 13
Commencement Day, 1895	6th Mo. 14

VACATION.

Examinations for Admission, 9.30 A. M.	9th Mo. 24
College Year 1895-96 begins*	9th Mo. 25
Winter Recess begins	12th Mo. 21
Winter Term begins 1896*	1st Mo. 3
Second Half-year begins	2d Mo. 1
Spring Recess begins	4th Mo. 16
Spring Term begins	4th Mo. 28
Alumni Meeting	6th Mo. 17
Examinations for Admission, 9.30 A. M.	6th Mo. 18
Commencement Day, 1896	6th Mo. 19

* The first recitations are due promptly at *half-past nine o'clock* at the beginning of each term. No absences from them are excused, unless clearly unavoidable.

History and Description.

IN the spring of 1830, a meeting of a few Friends in Philadelphia, shortly followed by a similar meeting in New York, originated Haverford School. The joint committee expressed the object of the effort as follows: "The members of the Society of Friends, having hitherto labored under very great disadvantages in obtaining for their children a guarded education in the higher branches of learning, combining the requisite literary instruction with a religious care over the morals and manners of the scholars, . . . and carefully preserving them from the influence of corrupt principles and evil communications, it is therefore proposed that an institution be established in which the children of Friends shall receive a liberal education in ancient and modern literature, and the mathematical and other sciences."

The \$40,000 supposed to be necessary was raised without great effort, and the committee went out to seek a location. They say: "We wished to procure a farm in a neighborhood of unquestionable salubrity—within a short distance of a Friends' meeting—of easy access from this city at all seasons of the year, . . . and that was recommended by the beauty of the scenery and a retired situation." They then go on to say that of the many places presented to them the only one which combined all the advantages was one of 198½ acres (since increased to 215), "near the eight-mile stone on the Lancaster Turnpike." They explain the present and prospective merits of the farm, the beauty of the natural woods, the unfailing springs of purest water, the nearness to the new Pennsylvania Railroad, in words which the succeeding half-century has amply justified.

On the 28th of Tenth month, 1833, the school opened with 21 students. Provision had been made for three teachers and a superintendent.

“A Teacher of Ancient Languages and Ancient Literature.

“A Teacher of English Literature, and Mental and Moral Philosophy.

“A Teacher of Mathematics and Natural Philosophy.”

The Superintendent was to have charge of the government, order, and domestic economy of the family.

The regulations of the new school were rigid. The bounds and time of the boys were very strictly marked out. All the details of the daily programme were arranged with great care; and if the elaborate provision of a number of wise men for the normal growth of students could convert boys into perfect men, the students of Haverford of fifty years ago had every advantage.

The High School thus established grew rapidly into prosperity and debt. The charges were low, the teachers were liberally paid, and the years which followed were marked by a constant endeavor to produce a maximum of good fruits from very limited funds. The deficiencies were made up in a liberal spirit, and a constant growth maintained by frequent subscriptions. All the time the school was justifying the effort by the quality of its results, and making for itself an increasing number of friends.

One of the first acts of the committee, after the absolute necessities of the school were provided for, was to construct a gymnasium, and make arrangements for systematical physical work. They were determined that the advantage gained by the salubrity of the surroundings should not be lost for want of exercise. Under their care the lawn was graded at great expense, and foreign and native trees set out, with the design to make it a great arboretum. Cricket was introduced, a game not known elsewhere in America, and has flourished since. A greenhouse and flower-garden were established and maintained for twenty years by the work of the boys. The ideas that have done harm elsewhere, that schools were places for mental development only, had no foothold here, but morals, muscles, and senses received their due share of culture.

In 1845 a temporary suspension was decreed, to allow the funds to accumulate and give time for the collection of an endowment, which suspension lasted for three years. In 1852 the observatory

was built, and supplied with an 8-inch equatorial and 4-inch transit. In 1856 the school was changed to a college, and authorized by the Legislature to grant degrees, but previous to this time the course had been as extended as in many colleges. It was still hampered with a large preparatory department, which was not abolished till 1861. In 1863 the Alumni Hall and Library were built. In 1876-7 Barclay Hall, containing private dormitories and study-rooms, was erected, at a cost of \$82,000, which was collected by subscription. The Chemical Laboratories were perfected in 1878. The new Observatory was built in 1883, the Mechanical Laboratory established in 1884, and a new building erected in 1890; the Biological Laboratory was established in 1886, and the Physical Laboratory in 1888. Chase Hall, for lecture and recitation-rooms, was built in 1888, and the Cricket Shed in 1893.

During this time Haverford had developed into a fully-organized college. Many rules, adapted to boys of a boarding-school age, had been modified or abandoned, though enough of restraint was retained to provide against demoralization. The standard of admission was raised. Students of any denomination were admitted, though Friends still retained the general control. The number of teachers was increased five-fold. By various donations and bequests the endowment fund was enlarged. The annual charge was increased from \$200 to \$500,* which still fails to represent what the college has to pay for professors' salaries and board and care of students. Retaining the old idea of a "guarded education" and "a religious care over morals and manners," the college has sought to effect these results, and has measurably succeeded, rather by appeals to Christian principle and manliness than by arbitrary power.

In Barclay Hall, the hall of residence, two students occupy a study-room, and each has his private, adjoining bed-room. A few single rooms are also provided. Recitation-rooms, laboratories, and dining-room are in Founders' Hall. The Library and Observatory are in separate buildings near by. Some of the professors live in

* The price may vary, depending on the situation of the room, from \$400 to \$525. Most of the rooms involve a payment of \$500.

the halls with the students, and others have cottages on the grounds.

The college has a remarkably pleasant and healthful location in the township of Haverford, Delaware County,* Pa., nine miles west of Philadelphia, on the Pennsylvania Railroad. The buildings are surrounded by grounds of about sixty acres, tastefully laid out, and adorned with well-kept lawns, and a great variety of trees and shrubbery. These grounds comprise excellent fields for cricket, base-ball, foot-ball, tennis, and other field games, a running and bicycle track, and a pond for skating.

The courses of study are designed to give a liberal education. Their scope will be seen on the following pages. Religious instruction is carefully provided. In addition to the daily reading of the Holy Scriptures, recitations in the English or Greek New Testament or in Scripture History are required of the student once a week. By exposition and collateral information the instructors endeavor to enforce the true meaning of the lessons. Haverford College desires to inculcate the simple truths of the Christian religion.

* Haverford *Post-Office* is in Montgomery County.

Corporation.

President,

T. WISTAR BROWN,
233 Chestnut Street, Philadelphia.

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Girard Building, Philadelphia.

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409 Chestnut Street, Philadelphia.

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John Farnum Professor of Chemistry.

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Professor of Greek.

LEVI T. EDWARDS, A. M.,
Professor of Mechanics and Physics.

WILLIAM COFFIN LADD, A. M.,
Professor of French.

FRANCIS B. GUMMERE, PH. D.,
Professor of English and German.

FRANK MORLEY, A. M.,
Professor of Pure Mathematics.

* ERNEST WILLIAM BROWN, A. M.,
Professor of Applied Mathematics.

* Absent 1894-95, in Cambridge, England.

WILFRED P. MUSTARD, PH. D.,
Professor of Latin.

WILLIAM H. COLLINS, A. M.,
Director of the Observatory.

GEORGE A. BARTON, PH. D.,
Lecturer on Bible Languages.

WILLIAM DRAPER LEWIS, PH. D.,
Instructor in Political Science.

HENRY S. PRATT, PH. D.,
Instructor in Biology (David Scull Foundation).

JAMES A. BABBITT, A. B., REGISTRAR,
and Instructor in Physical Training.

RUFUS M. JONES, A. M.,
Instructor in Philosophy and History.

EMORY R. JOHNSON, PH. D.,
Instructor in Economics.

OSCAR MARSHALL CHASE, S. B.,
Assistant in the Drawing Room and Shop.

ANSON B. HARVEY, S. B.,
Assistant in the Library.

THOMAS HARVEY HAINES,
Secretary of the College.

Graduate Students.

CHASE, OSCAR MARSHALL, S. B. (Haverford, 1894),
 Hazelton, Pa.
Major Subject—Engineering.

CONARD, HENRY SHOEMAKER, S. B. (Haverford, 1894),
 Lansdowne, Pa.
 Haverford Fellow.
Major Subject—Biology.

HARVEY, ANSON BURLINGAME, S. B. (Haverford, 1894),
 Galena, Kan.
Major Subject—English History.

HASTINGS, WILLIAM W., A. B. and A. M. (Maryville, '86 & '92),
 (A. M. Haverford, 1894.)
 Graduate Union Theological Seminary.
 West New Brighton, S. I., N. Y.
Major Subject—Semitic Languages.

KEMBLE, IRA O., S. B. (Penn, 1894),
 Oskaloosa, Iowa.
 Penn Fellow.
Major Subject—Chemistry.

VILLARS, JOHN OSCAR, S. B. (Wilmington, 1894),
 Clarksville, Ohio.
 Wilmington Fellow.
Major Subject—Mathematics.

WHITE, ROY WILSON, S. B. (Earlham, 1894),
 Lewisville, Ind.
 Earlham Fellow.
Major Subject—Latin.

SENIOR CLASS.

Bettle, Samuel, Jr.,	<i>Philadelphia, Pa.,</i>	Arts.
Blanchard, Edmund, Jr.,	<i>Bellefonte, Pa.,</i>	Arts.
Brown, Samuel Hulme,	<i>Germantown, Pa.,</i>	Arts.
Conklin, Frank Henry,	<i>Brooklyn, N. Y.,</i>	Arts.
Cookman, Charles Howland,	<i>Wilmington, Del.,</i>	Arts.
Engle, James Linton,	<i>Haddonfield, N. J.,</i>	Arts.
Evans, Joseph Spragg, Jr.,	<i>West Chester, Pa.,</i>	Arts.
Goodman, William,	<i>Cincinnati, O.,</i>	Mechanical Eng.
Hay, Arthur Moorhead,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Hay, Erroll Baldwin,	<i>Philadelphia, Pa.,</i>	Science.
Hilles, William Smedley,	<i>Frankford, Pa.,</i>	Science.
Leeds, John Bacon,	<i>Seal, Pa.,</i>	Science.
Lippincott, George,	<i>Wyncote, Pa.,</i>	Arts.
Taylor, Charles Clifford,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Thomas, Allen Curry,	<i>Philadelphia, Pa.,</i>	Science.
Thomas, Henry Evan,	<i>Philadelphia, Pa.,</i>	Science.
Webster, Walter Coates,	<i>West Grove, Pa.,</i>	Science.

Morris, Alfred Paul,	<i>Philadelphia, Pa.</i>	
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JUNIOR CLASS.

Adams, Douglas Howe,	<i>Philadelphia, Pa.,</i>	Arts.
Babb, Maurice J.,	<i>Marshallton, Pa.,</i>	Science.
Bettle, William Henry,	<i>Oaklyn, N. J.,</i>	Mechanical Eng.
Brecht, Samuel Kriebel,	<i>Worcester, Pa.,</i>	Science.
Brooke, Mark,	<i>Radnor, Pa.,</i>	Science.
Clauser, Milton,	<i>Haverford, Pa.,</i>	Arts.
Coca, Arthur Fernandez,	<i>Wayne, Pa.,</i>	Arts.
Deuell, George Henry,	<i>Bangall, N. Y.,</i>	Arts.
Haines, Thomas Harvey,	<i>Westtown, Pa.,</i>	Arts.
Harris, Henry John,	<i>Philadelphia, Pa.,</i>	Arts.
Hartley, Albert Dempsey,	<i>Camden, N. J.,</i>	Science.
Hunsicker, J. Quincy, Jr.,	<i>Philadelphia, Pa.,</i>	Science.
Lester, John Ashby,	<i>Pasadena, Cal.,</i>	Arts.
Maier, Paul D. I.,	<i>Philadelphia, Pa.,</i>	Arts.
Middleton, Samuel,	<i>Wilmington, Del.,</i>	Mechanical Eng.
Scattergood, Joseph Henry,	<i>Philadelphia, Pa.,</i>	Arts.
Webster, Homer J.,	<i>Quaker City, O.,</i>	Science.
Wood, L. Hollingsworth,	<i>Mt. Kisco, N. Y.,</i>	Arts. *

Alsop, William Kite,	<i>Haverford, Pa.</i>
Way, Marshall Warren,	<i>West Chester, Pa.</i>
Sharpless, William Clemson,	<i>Narberth, Pa.</i>

SOPHOMORE CLASS.

Beidelman, Prescott Burton,	<i>Little Rock, Ark.,</i>	Science.
Brown, Richard Cadbury,	<i>Westtown, Pa.,</i>	Arts.
Burns, William John,	<i>Bryn Mawr, Pa.,</i>	Science.
Collins, Alfred Morris,	<i>Philadelphia, Pa.,</i>	Mechanical Eng.
Darlington, Morton Pennock,	<i>Norway, Pa.,</i>	Arts.
Detwiler, Frank Hughes,	<i>Norristown, Pa.,</i>	Science.
Edwards, Ernest Russell,	<i>Omaha, Neb.,</i>	Mechanical Eng.
Field, Elliot,	<i>Wayne, Pa.,</i>	Arts.
Fisher, Wager,	<i>Bryn Mawr, Pa.,</i>	Arts.
Howson, Charles Henry,	<i>Wayne, Pa.,</i>	Arts.
Hume, John Elias,	<i>Philadelphia, Pa.,</i>	Science.
Jacobs, Francis Brinton,	<i>West Chester, Pa.,</i>	Science.
Levett, Walker Moore,	<i>Philadelphia, Pa.,</i>	Arts.
Maxfield, Francis Norton,	<i>Amesbury, Mass.,</i>	Arts.
McCrea, Roswell Cheney,	<i>Norristown, Pa.,</i>	Arts.
Nason, Charles Dickens,	<i>Philadelphia, Pa.,</i>	Science.
Rhoads, William Gibbons,	<i>Germantown, Pa.,</i>	Science.
Rodney, Warren Brown,	<i>Broomall, Pa.,</i>	Arts.
Thacher, Frank William,	<i>Florence, N. J.,</i>	Science.
Thomas, Edward,	<i>Haverford, Pa.,</i>	Arts.
Watkins, James C. T.,	<i>Baltimore, Md.,</i>	Arts.

Chalfant, Thomas Marshall,	<i>Kennett, Pa.</i>	
MacAfee, William Harrison,	<i>Ardmore, Pa.</i>	

FRESHMAN CLASS.

Bell, Charles Herbert,	<i>Philadelphia, Pa.,</i>	Arts.
Cadbury, William Warder,	<i>Philadelphia, Pa.,</i>	Arts.
Dean, Morris Burgess,	<i>Cincinnati, O.,</i>	Science.
Gilpin, Vincent,	<i>West Chester, Pa.,</i>	Arts.
Haines, Joseph Howell,	<i>Germantown, Pa.,</i>	Arts.
Harding, Arthur Search,	<i>Philadelphia, Pa.,</i>	Arts.
Hoffman, Benjamin Rose,	<i>Philadelphia, Pa.,</i>	Science.
Janney, Walter Coggeshall,	<i>Philadelphia, Pa.,</i>	Science.
Jenks, John Story, Jr.,	<i>Philadelphia, Pa.,</i>	Science.
Lane, John Irving,	<i>Port Chester, N. Y.,</i>	Mechanical Eng.
McGrath, Francis Sims,	<i>Philadelphia, Pa.,</i>	Science.
Morgan, Samuel Rowland,	<i>Germantown, Pa.,</i>	Arts.
Rhoads, Samuel,	<i>Germantown, Pa.,</i>	Science.
Scattergood, Alfred Garrett,	<i>Philadelphia, Pa.,</i>	Arts.
Stadleman, Frederic,	<i>Bala, Pa.,</i>	Arts.
Strawbridge, Frank Reeves,	<i>Germantown, Pa.,</i>	Science.
Swan, Frederic Asa,	<i>Sanford, Fla.,</i>	Arts.
Syze, Albert,	<i>Yorktown Heights, N. Y.,</i>	Arts.
Taylor, William Jordan,	<i>Cincinnati, O.,</i>	Science.
Taylor, Joseph Wright,	<i>Philadelphia, Pa.,</i>	Science.
Towle, Clifton Augustus,	<i>Winthrop, Me.,</i>	Arts.
Varney, Alpheus Gould,	<i>Windham, Me.,</i>	Arts.
Varney, C. Arthur,	<i>Providence, R. I.,</i>	Arts.
Vernon, John Jesse,	<i>Bangor, Iowa,</i>	Science.
Wistar, Thomas,	<i>Germantown, Pa.,</i>	Arts.
Wood, Richard Davis,	<i>Philadelphia, Pa.,</i>	Science.
<hr/>		
Bishop, Alexander Hamilton,	<i>West Chester, Pa.</i>	
Hulne, Frederic George,	<i>Philadelphia, Pa.</i>	
Sisler, Perlee Chandler,	<i>Wilmington, Del.</i>	

SUMMARY.

Graduate Students,	7
Seniors,	18
Juniors,	21
Sophomores,	23
Freshmen,	29
	<hr/>
	98

Admission.

CANDIDATES for the Freshmen Class are admitted either by examination or on certificate.

The certificates of principals of first-class schools will, at the discretion of the President, be accepted in place of entrance examinations. Blank forms will be furnished on application. Certificates of private tutors will *not* be accepted.

Examinations will be held twice a year, in the Sixth and Ninth months, beginning at 9.30 A. M. on the morning preceding Commencement Day and on the morning preceding the opening of the College year.

SUBJECTS OF EXAMINATION *

For all Candidates :

ENGLISH.—The Middle-State College requirements as follows, or equivalents :

NOTE.—No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, idiom, or division into paragraphs.

I. *Reading*.—A certain number of books will be set for reading. The candidate will be required to present evidence of a general knowledge of the subject-matter, and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics, to be chosen by the candidate from a considerable number—perhaps ten or fifteen—set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may present an exercise book, properly certified by his instructor, containing compositions or

* Students entering in 1895 may present the requirements of last year's catalogue if they prefer.

other written work done in connection with the reading of the books.

The books set for this part of the examination will be :

1895: Shakspeare's *Twelfth Night*; *The Sir Roger de Coverley Papers* in *The Spectator*; Irving's *Sketch Book*; Scott's *Abbot*; Webster's *First Bunker Hill Oration*; Macaulay's *Essay on Milton*; Longfellow's *Evangeline*.

1896: Shakspeare's *A Midsummer Night's Dream*; Defoe's *History of the Plague in London*; Irving's *Tales of a Traveller*; Scott's *Woodstock*; Macaulay's *Essay on Milton*; Longfellow's *Evangeline*; George Eliot's *Silas Marner*.

1897: Shakspeare's *As You Like It*; Defoe's *History of the Plague in London*; Irving's *Tales of a Traveller*; Hawthorne's *Twice Told Tales*; Longfellow's *Evangeline*; George Eliot's *Silas Marner*.

II. *Study and Practice*.—This part of the examination presupposes the thorough study of each of the works named below. The examination will be upon subject-matter, form, and structure.

The books set for this part of the examination will be :

1895: Shakspeare's *The Merchant of Venice*; Milton's *L'Allegro*, *Il Penseroso*, *Comus*, and *Lycidas*; Macaulay's *Essay on Addison*.

1896: Shakspeare's *The Merchant of Venice*; Milton's *L'Allegro*, *Il Penseroso*, *Comus*, and *Lycidas*; Webster's *First Bunker Hill Oration*.

1897: Shakspeare's *The Merchant of Venice*; Burke's *Speech on Conciliation with America*; Scott's *Marmion*; Macaulay's *Life of Samuel Johnson*.

HISTORY.—United States History, Greek and Roman History.

NOTE.—English History may be substituted for Ancient History in the case of students not presenting the Greek or Latin Language.

MATHEMATICS.—*Arithmetic*, including fractions, the decimal and English systems of weights and measures, square root, percentage, and interest; *Algebra*, including quadratic equations and radicals; *Plane Geometry*.

NOTE.—*Solid Geometry* will be required of all students not presenting Greek.

SCIENCE.—Elementary Physics and Human Physiology will be required of all students presenting neither Greek nor Latin.

TWO OF THE FOLLOWING LANGUAGES :

NOTE.—Of all candidates for the Bachelor of Arts degree *either* Greek *or* Latin will be required. Of all candidates for admission to the Engineering course only one language will be required.

Greek.—A thorough knowledge of the Grammar, including scanning of hexameter verse ; Xenophon's *Anabasis*, four books ; Homer's *Iliad*, three books ; sight reading from Xenophon and Homer ; ability to write simple sentences in Greek with accents ; Jones's Greek Composition, twenty-five Exercises, will indicate the amount necessary.

Latin.—Cæsar's *Gallie War*, four books ; Vergil's *Æneid*, six books ; Cicero, six orations. Sight reading from Cicero, Cæsar, and Nepos. General questions on grammar, prosody, history, and mythology suggested by the text. Translation of easy prose from English into Latin ; Harkness, Parts I and II, or Jones's Exercises will indicate the amount necessary.

German.—A thorough knowledge of the Grammar, ability to read at sight ordinary prose or poetry, and to translate simple English sentences into German. The Joynes-Meissner Grammar is recommended. The minimum amount to be read may be indicated by Joynes's *German Reader* ; Storm's *Immensee*, *Geschichten aus der Tonne* ; Schiller, *Jungfrau von Orleans*.

French.—A thorough knowledge of the Grammar ; ability to read at sight ordinary prose or poetry, and to translate simple English sentences into French. Grandgent's Grammar is recommended. The minimum amount to be read may be indicated as follows : Super's *French Reader*, Parts II, III, and IV ; Erckmann-Chatrrian's *Madame Thérèse* ; Fontaine's *Historiettes Modernes*, I ; Sand's *La Mare au Diable*.

Equivalents will be accepted in all the linguistic requirements.

Students not able to pass the full examinations may be conditioned on a limited number.

Students not candidates for a degree may, at the discretion of the Faculty, be admitted to pursue special courses, for proficiency in which certificates may be granted; but this permission will be given only to students of sufficient age, ability, and diligence to insure their success.

Candidates may be admitted to advanced classes if found fitted in all the regular studies of the course up to the point at which they enter.

Each candidate must forward, together with his application, a certificate of good moral character from his last teacher; and students from other colleges must present certificates of honorable dismissal in good standing.

Expenses.

THE usual charge for Tuition, Board, and Room Rent in Barclay Hall is five hundred dollars (\$500) a year.

A few students will be taken in larger rooms for five hundred and twenty-five dollars (\$525) a year, and a few, in Founders' Hall, for four hundred dollars (\$400) a year.

NOTE.—The rent of rooms includes steam heat, electric light, necessary bedroom furniture, and care of rooms. Students will supply their study-room furniture, also towels and table napkins.

The charge for Tuition is one hundred and fifty dollars (\$150) a year; for Tuition and mid-day meal, two hundred dollars (\$200) a year.

Books, stationery, and laundry work will, at the option of the student, be supplied by the College and charged on the half-yearly bills. Materials consumed and breakage in the Laboratories are also charged.

The charge for Graduate Students for Board and Tuition is three hundred dollars (\$300); for Tuition alone, one hundred dollars (\$100).

Bills for Board and Tuition are payable one-half at the beginning and one-half at the middle of the College year.

Undergraduate Scholarships.

A FEW scholarships, varying in amount from \$100 to \$500, are at the disposal of the College.

These will be granted annually to properly qualified students who cannot afford to pay the full charges. In awarding the scholarships, both character and intellectual preparation are taken into account. Students should send, with their application, certificates of moral character. The intellectual preparation is tested by examination. Blank forms on which the application must be written will be furnished by the President of the College. Candidates are advised to apply at an early date.

Fellowships.

THERE are four Graduate Fellowships of sufficient value to cover the whole charge for Board and Room Rent. By the conditions of the donors, one of these will be given to a graduate of each of the following Colleges, viz. : Haverford, Earlham, Penn, and Wilmington ; *Provided*, that the student shall be recommended by the President of the College at which he graduated as likely to profit by the instruction given at Haverford, and that he shall be satisfactory to the Faculty of Haverford College.

Should there not be satisfactory applications for these fellowships by Fourth month 1st, they may be otherwise disposed of.

Courses of Instruction.

THERE are three courses:—

1. *Course in Arts*, leading to the degree of *Bachelor of Arts*.
2. *Course in Science*, leading to the degree of *Bachelor of Science*.
3. *Course in Mechanical Engineering*, leading to the degree of *Bachelor of Science*.

The first two of these courses are combined in the following table.

Students must continue for two years the languages presented on admission. The degree of Bachelor of Arts will be given only to a student who has either Latin or Greek.

Course in Arts and Course in Science.

FRESHMEN YEAR.

1. *Scripture*. General outline of the history and literature of the Bible. One hour a week.
2. *Rhetoric, Composition, and English Literature*. *Principles of Rhetoric* (A. S. Hill); Readings in English Prose; Lectures on English Literature; Themes.
3. *History*. Outlines of Ancient History; Mediæval History; Political and Industrial History of England. Subjects 2 and 3, four hours a week.
4. *Mathematics*. Sharpless's *Solid Geometry*; Hall and Knight's *Higher Algebra*; Oliver, Wait, and Jones's *Trigonometry*; Geometrical Conic Sections. Four hours a week.

NOTE.—Students presenting *Solid Geometry* for admission will take a course in Elementary Mechanics.

5 and 6. Two of the following languages:

- a. *Greek*. Lysias, *Select Orationes*; Herodotus, *Selections*; Homer, *Selections*; Translation at sight; Greek Composition. Four hours a week.
- b. *Latin*. Vergil, *Æneid*, Bks. vii, viii, ix; Cicero, *De Senectute*; Livy, Bk. xxi; Translation at sight; Prose Composition. Four hours a week.
- c. *German*. Exercises in composition; Freytag, *Die Journalisten*; Schiller

Wallenstein; Lessing, *Minna von Barnhelm*; Selections from German Prose; Reading at sight; Private Reading of books assigned by the instructor. Four hours a week.

d. *French*. Nineteenth Century: Daudet, Augier, Labiche, Sandeau, Paileron, Lamartine, Hugo. Seventeenth Century: Bossuet, Bourdaloue, Massillon, Corneille, Racine, Molière. History of French Literature (XVII–XIX Centuries); Composition. Four hours a week.

7. *Physical Training*. Lectures on Hygiene and Gymnasium Work.

SOPHOMORE YEAR.

1. *Scripture*. The New Testament in Greek, Luke's Gospel. One hour a week.

2. *Mathematics*. Smith's *Analytical Geometry*. Four hours a week the first half year.

3 and 4. Two of the following languages:

a. *Greek*. Plato, *Apology* and *Crito*, or *Phaedo*; Æschylus, *Prometheus*; Euripides, *Alceste*; Lectures; Translation at sight (Xenophon, *Memorabilia*). Dictation Exercises in writing Greek. Three hours a week.

b. *Latin*. Cicero, *In C. Verrem*, Act. II. Lib. 5; Pliny, *Selected Letters*; Horace, *Odes* and *Epodes*; Translation at sight; Prose Composition. Three hours a week.

c. *German*. Goethe, *Faust*, *Iphigenie*, and *Aus Meinem Leben*; Freytag, *Aus dem Staat Friedrichs des Grossen*; Private Reading; Lectures in German Literature. Three hours a week.

d. *French*. Molière, Hugo, Balzac. History of French Literature from beginning to the Seventeenth Century. Three hours a week.

5. *Physics*. Elementary Physics, Lectures, and Laboratory Work. Five hours a week the first half year.

6. *Chemistry*. Elementary General Chemistry, Lectures, and Laboratory Work. Five hours a week the second half year.

NOTE.—In all such cases the number of recitations or their equivalent in Laboratory Work is given—one hour of recitation being supposed equivalent to two and a half of Laboratory.

7. The student will also elect one of the following the second half year:

a. *Mathematics*. Calculus. Four hours a week.

b. *Elementary Biology*, Lectures, and Laboratory Work. Five hours a week.

8. *Physical Training*. Gymnasium Work.

9. *Themes*.

JUNIOR YEAR.

1. *Scripture*. One hour a week.

2. *Political Science*. Political Economy; Principles of Constitutional Law (Text-Book and Lectures). Two hours a week.

3. *Philosophy*. Logic and Psychology. Two hours a week.

4. *Themes.*

5. *Elective Studies* from the lists on pages 26–29, subject to the limitations in the following notes. Ten hours a week.

Note 1. All students shall have had before graduation at least one year (three hours) each of German and French.

Note 2. All candidates for the Bachelor of Arts degree shall take either Greek, Latin, or Mathematics (3 hours) in the Junior year.

Note 3. All candidates for the Bachelor of Science degree shall take two of the following (each three hours) in the Junior Year: Mathematics, Chemistry, Physics, Geology and Astronomy, Biology.

 SENIOR YEAR.

1. *Scripture.* One hour a week.

2. *Ethics.* Two hours a week.

3. *Themes.*

4. *Elective Studies* from the lists on pages 26–29. Twelve hours a week.

 Synopsis of Above Courses.

FRESHMEN.

Scripture,	1 hour.
English and History,	4 hours.
Mathematics,	4 "
Two of the following,	8 "
Greek,	4 hours.
Latin,	4 "
German,	4 "
French,	4 "
Physical Training.	
Themes.	

JUNIOR.

Scripture,	1 hour.
Political Science,	2 hours.
Philosophy,	2 "
Electives,	10 "
Themes.	

SOPHOMORES.

Scripture,	1 hour.
Mathematics, 1st half	} 4 hours.
Mathematics, 4 } second half	
or Biology 5 }	
Physics, 1st half,	} 5 hours.
Chemistry, 2d half,	
Two of the following,	6 hours.
Greek,	3 hours.
Latin,	3 "
German,	3 "
French,	3 "

Physical Training.
Themes.

SENIOR.

Scripture,	1 hour.
Ethics,	2 hours.
Electives,	12 "
Themes.	

Mechanical Engineering Course.

FRESHMAN YEAR.		SOPHOMORE YEAR.	
Mathematics,	4 hours.	Mathematics,	4 hours.
Shop Work and Drawing, 10=4	"	Shop Work and Drawing, 10=4	"
French or German, . .	4 "	Physics and Chemistry, .	5 "
English,	4 "	French or German, . . .	3 "
JUNIOR YEAR.		SENIOR YEAR.	
Applied Mathematics, .	3 hours.	Ethics,	2 hours.
Shop Work and Drawing, 10=4	"	Mechanics and Thermo-	
Materials of Engineering,	2 "	dynamics,	3 "
Chemistry,	5=2 "	Mechanical Laboratory, 10=4	"
Descriptive Geometry, etc.,	2 "	Theory of Steam Engine,	
Electives,	2 "	Machine Design, . . .	3 "
		Electives,	3 "

For Electrical Students the course will be modified during the last two years so as to include a course in Theoretical and Practical Electricity.

Scripture and Themes are required throughout.

Course Preparatory to the Study of Medicine.

Any regular student anticipating the study of medicine may distribute this course over his four years, leading to the degree of A. B. or S. B.

All students, regular or special, who have satisfactorily completed the course will receive a certificate to that effect.

FIRST YEAR.		SECOND YEAR.	
Physiology and Biology, 12=5	hours.	Biology, Histology, etc., 10=4	hours.
Drawing,	5=2 "	Chemistry,	8=5 "
Mathematics,	4 "	Physics,	6=3 "
Latin or German or French,	4 "	Psychology and Logic, .	2 "
English,	2 "	English,	2 "

Scripture and Themes are required throughout.

Elective Courses.

Seniors and Juniors will elect from the following list, with the approbation of the Faculty, sufficient to make up the required number of hours.

GREEK.

I. History of Greek Literature. Lectures; Selections for Reading.

[Prof. Gifford. 3.]*

II. Selections from the Greek Orators. Lectures on Greek Art and Antiquities.

[Prof. Gifford. 3.]

III. Sophocles; Euripides; Thucydides; Dictation exercises in writing Greek.

[Prof. Gifford. 3.]

Courses I and II are given in alternate years.

LATIN.

I. The principal Satires of Horace and Juvenal; Selections from Lucretius and Catullus; Tacitus, *Annals*, Bks. i-vi. Translation at sight.

[Dr. Mustard. 3.]

II. Horace, *Epistles*; Vergil, *Bucolics* and *Georgics*, Bks. i, ii, iv; Terence, *Adelphoe*, *Andria*, *Phormio*; Plautus, *Menæchmi*, *Bacchides*, *Captivi*. Translation at sight.

[Dr. Mustard. 3.]

ENGLISH.

I. ANGLO-SAXON.—Bright, *Anglo-Saxon Reader*; Cynewulf's *Elene*; Lectures.

[Dr. Gummere. 2.]

II. ENGLISH LITERATURE IN THE FOURTEENTH CENTURY.—Chaucer's *Canterbury Tales*. Lectures.

[Dr. Gummere. 1.]

III. SHAKSPERE.—*Lear*, *Hamlet*, *Tempest*, *As You Like It*; Private Readings; Lectures on Elizabethan Poetry.

[Dr. Gummere. 2.]

IV. ADVANCED ENGLISH COMPOSITION.—Exercises in Composition; Discussion of special work; Readings in English Prose.

[Dr. Gummere. 1.]

Only those who have attained good rank in themes for the Freshman and Sophomore Years will be admitted to this class. Members of it will be exempted from regular theme work.

* These figures represent the number of hours per week. In Laboratory Work, etc., two and a half hours count as one.

V. ENGLISH LITERATURE OF THE EIGHTEENTH AND NINETEENTH CENTURIES.—Selections from Representative Authors; Lectures; Private Readings.

[Dr. Gummere. 2.]

Courses III and IV will be omitted in 1895-96.

GERMAN.

I. MIDDLE-HIGH GERMAN.—Paul, *Mittelhochdeutsche Grammatik*. Selections from the Poems of Walther von der Vogelweide. *Das Niebelungenlied*.

[Dr. Gummere. 2.]

II. GOETHE, *Faust*, *Iphigenie*, and *Aus Meinem Leben*; Freytag, *Aus dem Staat Friedrichs des Grossen*; Private Readings; Lectures in German Literature.

[Dr. Gummere. 3.]

III. Exercises in Composition; Freytag, *Die Journalisten*; Schiller, *Wallenstein*; Lessing, *Minna von Barnhelm*; Sections from German Prose; Reading at sight; Private reading of books assigned by the instructor.

[Dr. Gummere. 4.]

IV. Joynes-Meissner, *German Grammar*; Joynes, *German Reader*; Storm, *Immensee*, *Geschichten aus der Tonne*; Translations at sight of ordinary prose; Exercises in Composition.

[Dr. Gummere. 3.]

FRENCH.

I. Molière, Hugo, Balzac. History of French Literature from Beginning to the Seventeenth Century.

[Prof. Ladd. 3.]

II. Nineteenth Century: Daudet, Augier, Labiche, Sandeau, Pailleron, Lamartine, Hugo. Seventeenth Century: Bossuet, Bourdaloue, Massillon, Corneille, Racine, Molière. History of French Literature (XVII-XIX Centuries) Composition.

[Prof. Ladd. 4.]

III. Grandgent's *French Grammar*; Super's *French Reader*; Erckmann-Chatrian's *Madame Thérèse*; Fontaine's *Historiettes Modernes*, I; Sand's *La Mare au Diable*.

[Prof. Ladd. 3.]

PURE MATHEMATICS.

I. Analytical Geometry of three Dimensions. Calculus.

[Prof. Morley. 3.]

This course is required of Engineering Students in their Junior year; and it is the proper course, in general, for all students who elect Pure Mathematics, in their Junior Year.

II. Modern Methods in Geometry.

[Prof. Morley. 3.]

III. Geometric Introduction to the Theory of Covariants.

[Prof. Morley. 3.]

APPLIED MATHEMATICS.

- I. Introduction to Analytical Mechanics, including Attraction and Potential. [Prof. Brown. 3.]
- II. Differential Equations (Forsyth). [Prof. Brown. 3.]
- III. Elementary Rigid Dynamics (Routh). [Prof. Brown. 3.]

HISTORY.

- I. Mediæval and Modern European History. [Prof. Jones. 2.]
 - II. Political and Constitutional History of England from the Anglo-Saxon Conquest to the Restoration. [Prof. Jones. 3.]
 - III. Political and Constitutional History of England from the Restoration to the present time. [Prof. Jones. 3.]
- Courses II and III are intended to be given in alternate years.
- IV. American Colonial History to 1783; Europe and America during the Eighteenth Century. [Prof. Thomas. 3.]
 - V. Constitutional and Political History of the United States, 1783 to 1865. [Prof. Thomas. 3.]
- Courses IV and V are intended to be given in alternate years.

PHILOSOPHY.

- History of Philosophy. [Prof. Jones. 2.]

POLITICAL AND SOCIAL SCIENCE.

- I. Political Science; the English Government, its present workings and past history; Comparative Study of existing Federal Governments; Election Laws and Political Organization; State Governments in the United States; Municipal Government in America and Europe; Lectures. [Dr. W. D. Lewis. 2.]
- II. Practical Economics; Money, the Tariff, Municipal Government, Transportation. [Dr. E. R. Johnson. 2.]

ASTRONOMY.

- I. Practical Astronomy, with Observatory Practice. [Prof. Collins. 2.]
- II. Descriptive Astronomy. (Half-year.) [Prof. Collins. 3.]

CHEMISTRY.

- I. General Chemistry; Lectures and Laboratory Work. [Dr. L. B. Hall. 2 or more.]
- II. Analytical Chemistry; Lectures and Laboratory Work. [Dr. L. B. Hall. 2 or more.]
- III. Organic Chemistry; Lectures and Laboratory Work. [Dr. L. B. Hall. 2.]

BIOLOGY.

- I. Invertebrate Morphology; Lectures and Laboratory Work.

[Dr. H. S. Pratt. 2.]

- II. Vertebrate Morphology; Lectures and Laboratory Work.

[Dr. H. S. Pratt. 2.]

- III. Embryology; Lectures and Laboratory Work. [Dr. H. S. Pratt. 3.]

Courses I and II each occupies an entire year. Course III is given as part of Course II and cannot be taken apart from it. Course II must be preceded by Course I. Course I must be preceded by a Course in General Zoology. Seniors electing Biology will be given any advanced courses they may elect. It is hoped they will pursue special investigation.

GEOLOGY.

- Elementary Geology; Recitations and Field Work. (Half-year.)

[Dr. Pratt. 3.]

ENGINEERING.

- I. Materials of Construction; Theory of the Steam Engine.

[Prof. Edwards. 2.]

- II. Descriptive Geometry; Elements of Mechanism.

[Profs. Edwards and Brown. 2.]

Courses I and II will be given in alternate years.

- III. Machine Design and Draughting. (Open only to Engineering Students.)

[Prof. Edwards. 2.]

PHYSICS.

- I. Electricity and Magnetism; S. P. Thompson's Lessons and Emtage's Electricity and Magnetism; Lectures, Recitations, and Laboratory Work.

[Prof. Edwards. 3.]

- II. Electrical Engineering; Sligo's and Brooker's Electrical Engineering and S. P. Thompson's Dynamo-Electric Machinery, with Laboratory Work.

[Prof. Edwards. 2.]

- III. Theory of Heat; Stewart's Heat and Clausius' Mechanical Theory of Heat, with Laboratory Work.

[Prof. Edwards. 2.]

Grading of Students.

STUDENTS are divided, according to their grades, into five sections, A, B, C, D, E. Each student is notified of the section to which he has been assigned, but the grades are not published. Section E is composed of those who cannot be advanced to the next higher class, nor receive their Bachelor's degree. Daily recitations, hour examinations, and final examination are all used as elements in determining the standing of a student

Advanced Degrees.

BACHELORS OF ARTS AND BACHELORS OF SCIENCE of three years' standing may take the degrees of MASTER OF ARTS or MASTER OF SCIENCE, on submitting to the Executive Committee satisfactory evidence of continued good character, and passing an examination on some literary or scientific course of study which shall receive the approbation of the Faculty and Managers.

The following are stated as adequate courses of study to be presented by candidates for a second degree. Particulars can be had on application to the President.

I. Hebrew. Mitchell's Gesenius' Hebrew Grammar. Critical and philological reading and analysis of I and II Samuel; I and II Kings. Sight reading of Genesis, unpointed (edition of Muchlau et Kautzsch, Lipsiæ, 1885).

II. Assyrian. Lyon's Assyrian Manual. Friedrich Delitzsch's Assyrische Lesestuke. Syllabare (Sb. Sc.) S. 53-75. Neuassyrische Text (S. 110, 4-121).

III. The whole of the New Testament in Greek, with the introduction to N. T. of Scrivener, and of Westcott and Hort.

IV. The whole of Thucydides, together with Grote and Curtius on the Peloponnesian War; Greek composition.

V. Twelve Tragedies of Æschylus, Sophocles, or Euripides; Greek composition.

NOTE—A course similar to IV and V may be arranged in other Greek authors.

VI. Cicero's Tusculan Disputations (five books), *De Natura Deorum* and *De Officiis*, together with the History of Ancient Philosophy; Latin composition.

VII. Mommsen's and Merivale's Histories; the whole of Tacitus; Pliny's Letters; Latin composition.

VIII. German Literature, with translation at sight from any of the leading authors, and an essay in German.

IX. French Literature, with translation at sight from any of the leading authors, and an essay in French.

X. Greek Literature, with translation at sight from any of the leading authors, and an essay in Greek.

XI. Latin Literature, with translation at sight from any of the leading authors, and an essay in Latin.

XII. Pure Mathematics. Two of the following, or one in XII and one in XIII.

a. General Introduction to the Theory of Functions.

b. The Elliptic and Hyperelliptic Functions.

c. The Theory of Plane Curves.

d. Selections from the Theory of Surfaces.

XIII. Applied Mathematics. Two of the following, or one in XII and one in XIII.

a. Attraction and Potential. Rigid Dynamics.

b. Theoretical Dynamics including Least Action, the Principal Function, *La Grange's* and *Hamilton's* Equations. Spherical Harmonics with applications.

c. Hydrostatics and Hydrodynamics.

d. Lunar and Planetary Theories.

e. Elasticity.

An elementary knowledge of the Calculus and of Analytical Geometry will be required.

XIV. Theoretical Astronomy (Computation of an Orbit—*Oppolzer*, *Watson*, or *Gauss*).

XV. Practical Astronomy (*Chauvenet* and *Doolittle*); Observatory Work.

XVI. Rankine's Applied Mechanics, or Rankine's Civil Engineering.

XVII. European History; Political, Constitutional, Economic.

XVIII. American History; Political, Constitutional, Economic.

Courses in History can be arranged by consultation with the Professor in charge of the department.

XIX. Ecclesiastical History. A general knowledge of the leading facts in Early Church History and an acquaintance with Greek and Latin will be required; a special subject may be selected from the following:

a. The Writings of Barnabas and Justin and the Teaching of the Twelve Apostles.

b. The Clementine and Ignatian Epistles.

c. The Ecclesiastical History of Eusebius.

XX. Germanic Philology and Literature. (One of the following to be selected):

a. Anglo-Saxon.—Grein's *Bibliothek der angelsächsischen Poesie*; Sweet's Edition (Early English Text Society) of the Anglo-Saxon Version of the *Cura Pastoralis*; Cook's Sievers' Anglo-Saxon Grammar. A knowledge of Gothic Grammar is required in this as in the next course.

b. Middle High German.—*Das Nibelungenlied*; Walther von der Vogelweide; *Gudrun*; History of Early German Literature; Old High German Grammar.

c. Old Norse.—A course similar to *a* and *b* can be arranged in Old Norse Literature and Philology.

XXI. English Literature. An intimate acquaintance with the authors of some characteristic epoch will be required, and a good English style, manifested in an original essay.

XXII. Physics. Any two of the following, with Laboratory work: Mechanics (Sturm); Fluid Motion (Lamb); Thermodynamics (Clausius); Electricity and Magnetism (part of Mascart and Joubert); Acoustics (Donkin); Geometrical Optics (Heath); Physical Optics (Preston).

The Laboratory work required will, in general, be along the lines of the student's reading, and will consist either in the skillful repetition of some piece of research, or in some independent work of scientific value.

XXIII. Chemistry.	} Courses in these subjects can be arranged by consultation with the Professor in charge of the department.
XXIV. Political Economy.	
XXV. Biology.	

Candidates who are examined may also be required to hand in Dissertations on topics in the field of study which they have specially investigated.

Resident Graduates, who have completed an adequate course of study, may be admitted to an examination for a second degree at the expiration of one or two years.

Graduates of other Colleges and Scientific Schools of good standing, who present satisfactory evidence of character and qualifications, will be admitted as candidates for the degree of Master of Arts. One year's residence at Haverford College will be required of all such students.

Notice of application for examination must be given to the President two months* before Commencement. The examination for non-residents will be held during the last week in the Fifth month, and in no case at a later date. The fee for the Diploma of the

Second Degree is Twenty Dollars ; of subsequent degrees, Thirty Dollars, to be paid in all cases before the 10th of the Sixth month.

ALUMNI PRIZE FOR COMPOSITION AND ORATORY.

THE Association of the Alumni, in the year 1875, established an ANNUAL PRIZE, either of a Gold Medal or of an equivalent value in Books and a Bronze Medal, for excellence in Composition and Oratory.

The following are the rules governing the competition :

I. The Alumni Medal is offered yearly to the competition of the members of the Senior and Junior Classes, as a prize for the best delivered oration prepared therefor.

II. Three or five Judges shall be appointed from year to year by the Alumni Committee, who shall hear publicly, in Alumni Hall, all competitors who may be qualified to appear.

III. No oration shall occupy in delivery more than fifteen minutes.

IV. In making their award, while due weight is given to the literary merits of the oration, the Judges are to consider the prizes as offered to encourage more especially the attainment of excellence in elocution.

V. The Judges shall have the right to withhold the prize if the elocution and the literary merits of the oration fall below a suitable standard of excellence.

PRIZES FOR SYSTEMATIC READING.

Two prizes, of \$60 and \$40, respectively, will be given to those members of the Junior Class who, having creditably pursued their regular studies and paid proper attention to physical culture, shall have carried on the most profitable course of reading of standard authors during the Sophomore and Junior years.

The direction of the work and the decision as to the award of the prizes shall be in the hands of a committee consisting of the President, the Librarian, and the Professor of English.

Either or both prizes may be omitted if, in the judgment of the Committee, the work done does not justify the award.

THE CLASS OF 1870 PRIZE IN ENGLISH COMPOSITION.

This Prize, of the value of \$50, is offered under the following conditions: The competitors shall be members of the Senior or Junior Class. The standard of merit is excellence in composition, with chief regard to subject-matter, originality, and a clear, forcible, and correct style. Unless definite subjects should be announced, the writers are at liberty to choose their own; but such a choice must be submitted to the approval of the President of the College. The papers should not exceed the limits of an ordinary short essay, and should excel as much in harmonious proportion of material as in particular points of style. All essays must be submitted, by Fifth month 1st, to a committee to be appointed by the Class of 1870. The Prize is to be announced on the night of the Alumni oration and at Commencement, and is to be recorded in the College Catalogue.

HONORS.

For the purposes of Honors studies are divided as follows:

- I. Ancient Languages and Literature.
- II. Modern Languages and Literature.
- III. Mathematics, Physics, and Astronomy.
- IV. Chemistry and Biology.
- V. History, Philosophy, and Political Science.
- VI. Latin and French.
- VII. Chemistry and Physics.

Students candidates for Honors shall elect from one group at least five hours per week during the Junior year, and eight hours per week during the Senior year, and shall make their announcements of candidacy at the beginning of the Junior year.

Highest Honors and *Honors* may be given, dependent on the judgment of the Professors immediately interested, to be decided by special examination or otherwise.

Honors shall be announced at Commencement and in the succeeding catalogue.

Library.

LIBRARIAN, Professor Allen C. Thomas ; ASSISTANT, Anson B. Harvey.

THE number of bound volumes in the Library of Haverford College is 30,711. Numerous American and European periodicals, scientific and literary, are taken by the Library.

Through the liberality of friends of the College the theological and miscellaneous library of the late Gustav Baur, for many years Professor of Theology in the University of Leipsic, was bought and given to the College in 1889. It consists of 7,005 volumes, including several thousand bound pamphlets. It is rich in theology, Oriental languages, and in German literature. It has been classified, and a card catalogue prepared.

About \$1,800 yearly are expended for the purchase of books and periodicals.

The Library is open as a reading-room from 9.15 A. M. to 8 P. M., during which time the volumes in the alcoves may be freely consulted. The Librarian devotes stated hours each week to the purpose of assisting and directing students in their reading, and in the intelligent use of books of reference and of authorities. He also arranges courses of reading.

Chemical Laboratory.

DIRECTOR, Dr. Lyman B. Hall; ASSISTANT, Wm. K. Alsop.

THE Laboratory Work comprises elementary experiments in General Chemistry; an extended study of the more important elements and their compounds; qualitative and quantitative analysis; the preparation of pure compounds; and experimental work illustrating chemical laws and theories.

Students may substitute for the last two years of the Scientific Course a special course in Chemistry, embracing both theory and laboratory work.

Opportunity is given for elementary or advanced special work, with ample facilities for its prosecution.

Physical Laboratory.

DIRECTOR, Professor L. T. Edwards; ASSISTANT, A. D. Hartley.

THE Physical Laboratory occupies five medium-sized rooms, and is well equipped for work in the different departments of Physics. The apparatus has been selected with especial reference to quantitative rather than qualitative work, and includes in every department exact standards. The department of electricity has been exceptionally well equipped, and additions are gradually being made to the apparatus in all departments.

The students are instructed in the accurate measurement of various physical quantities in mechanics, heat, light, and electricity. They are also assigned a certain amount of qualitative

work leading up to a more intimate knowledge of the properties of matter.

The work of the more advanced students is supplemented by reading in the foreign and domestic scientific journals which are accessible in the Library.

Biological Laboratory.

DIRECTOR, Dr. H. S. Pratt; ASSISTANT, Henry S. Conard.

THE Biological Laboratory is well equipped with reagents and with microscopes and all the other necessary apparatus and appliances. It contains also about two hundred recent biological works and zoological and botanical charts.

The work consists of courses in General Zoology and Botany, followed by thorough courses in invertebrate and vertebrate anatomy, in histology and embryology.

Students who have completed the courses prescribed may elect advanced work or carry on special investigations.

Museum.

CURATOR, Dr. H. S. Pratt.

ORNITHOLOGY, Mineralogy, Geology, Conchology, Paleontology, and Invertebrate Zoology are well represented. The Herbarium contains about 3,000 species, many of which are foreign. Specimens in each department are classified and catalogued, and are used by lecturers and students in the class-rooms and laboratories.

Mechanical Laboratory.

DIRECTOR, Professor Levi T. Edwards; ASSISTANT, Oscar M. Chase.

THE MECHANICAL LABORATORY occupies a commodious building erected in 1890 especially for the Engineering Department. It contains a machine shop, carpenter shop, blacksmith shop, foundry, draughting room, blue-printing room, and stock room. The machine shop contains, besides several complete sets of machinists' tools for vise work, several lathes, a planer, sharper, drill press, vises, etc. The carpenter shop contains several complete sets of carpenters' tools, wood lathes, and a band saw. The foundry and blacksmith shop are well equipped.

The instruction begins with a series of graded exercises, which teach accuracy in the use of tools and illustrate the principles of machine construction. This is followed by practice in the construction of parts of machinery and the building of complete machines.

The students, under the care of the Director, are taken from time to time to visit machine shops and engineering constructions in Philadelphia and vicinity.

Astronomical Observatory.

DIRECTOR, W. H. Collins.

THE HAVERFORD OBSERVATORY affords students the means of becoming familiar with the use of astronomical instruments, and of acquiring, from actual observation, a practical acquaintance with Astronomy.

It contains two Equatorial Telescopes, one by Clark, having an object-glass 10 inches in diameter, and one with an object-glass of $8\frac{1}{4}$ inches, with filar micrometer and eye-pieces; a polarizing eye-piece; a Newtonian Reflector, with a silver-on-glass speculum of $8\frac{1}{4}$ inches diameter; a Prism Spectroscope; a Meridian Transit Circle having a Telescope of $3\frac{3}{4}$ inches aperture, with a circle at each end of the axis 26 inches in diameter; a Zenith Instrument of $1\frac{3}{4}$ inches aperture, with a micrometer; two Sidereal Clocks, one with mercurial compensation, the other used to connect with a Bond's Magnetic Chronograph.

The latitude of the Observatory is $40^{\circ} 0' 40''$ N.; its longitude, 6 minutes 59.4 seconds east from Washington.

A Special Course in Astronomy is offered to amateurs and teachers. The requisites for the course and the fees charged will depend on the work which the applicant desires to perform.

The Gymnasium.

DIRECTOR, James A. Babbitt; ASSISTANT, John A. Lester.

THE GYMNASIUM has just been refitted at considerable expense, with several improved gymnastic appliances, and now includes in its equipment rowing, sculling, and wrist machines, chest-weights of recent device, striking-bag and drum, and the necessary apparatus for the gymnastic game of basket-ball.

The Director gives systematic instruction, based upon careful physical examination, and an extensive addition for this purpose has been made in the anthropometric equipment.

Required work begins Twelfth month 1st and ends Fourth month 15th, and occupies three hours each week.

It is arranged in two courses, each occupying one season.

Students entering the Freshman class are required to take the two courses, one each year; and divisions for advanced work are formed of those giving evidence of previous systematic gymnasium drill.

Students entering the Sophomore class are required to complete one course, with a similar privilege of advanced standing.

While the work is required of the two lower classes only, it is elective for the upper classes, and it is expected that the majority of the members will take advantage of the advanced courses arranged.

Societies.

THE LOGANIAN SOCIETY was established by the Officers and Students in 1834.

THE EVERETT-ATHENÆUM is a literary society of the students.

A flourishing branch of the YOUNG MEN'S CHRISTIAN ASSOCIATION exists at the College.

Degrees, Prizes, and Honors Granted in 1894.

At the Commencement in 1894 Degrees were granted after examination to the following graduates :

BACHELOR OF ARTS.

GEORGE A. BEYERLE,	JAMES EDWARD HUGHES,
CHARLES COLLINS,	LOUIS JAQUETTE PALMER,
WILLIAM WISTAR COMFORT,	FRANK CLAYTON REX,
JOHN ALLEN DE COU,	FREDERICK PEARCE RISTINE,
CLIFFORD BAILY FARR,	FRANCIS JOSEPH STOKES,
JOHN PAUL HAUGHTON,	DAVID SHEARMAN TABER, JR.,
	PARKER SHORTRIDGE WILLIAMS.

BACHELOR OF SCIENCE.

*OSCAR MARSHALL CHASE,	ANSON BURLINGAME HARVEY,
HENRY SHOEMAKER CONARD,	SAMUEL WHEELER MORRIS,
GEORGE BROOKHOUSE DEAN,	EDWARD ENTWISLE QUIMBY,
KANE STOVELL GREENE,	HENRY WISMER SCARBOROUGH.

*WILLIAM JUSTUS STRAWBRIDGE.

*In Mechanical Engineering.

MASTER OF ARTS.

LESLIE ADELBERT BAILY, Greek.	WILLIAM W. HASTINGS, Oriental Lan-
CHARLES H. BEDELL, Electrical En-	guages.
gineering.	MAHLON Z. KIRK, Chemistry.
FRANKLIN A. DAKIN, Latin.	ARTHUR R. SPAID, History.
FRANCIS F. DAVIS, Mathematics.	EDWIN MOOD WILSON, English.
FRANCIS COPE HARTSHORNE, Church	
History.	

PRIZES.

The Alumni Prize for Composition and Oratory (\$50) was awarded to

EDMUND BLANCHARD, JR.

THE PRIZES FOR SYSTEMATIC READING WERE AWARDED TO

First Prize (\$60),	JAMES LINTON ENGLE
Second Prize (\$40),	Not awarded.

The Class of 1870 Prize in Composition (\$50) was awarded to

PARKER SHORTRIDGE WILLIAMS.

HONORS.

General Honors,	{ OSCAR MARSHALL CHASE,
	{ HENRY SHOEMAKER CONARD,
	{ PARKER SHORTRIDGE WILLIAMS.
Highest Honors in Modern Languages, . . .	PARKER SHORTRIDGE WILLIAMS.
Honors in Greek and Latin,	JOHN ALLEN DE COU.
Honors in Modern Languages,	{ WILLIAM WISTAR COMFORT,
	{ FRANK CLAYTON REX.
Honors in Engineering,	OSCAR MARSHALL CHASE.

List of Graduates and Honorary Degrees.

(Degrees conferred by other institutions are indicated by *italics*.)

THE ONLY DEGREE GRANTED ON GRADUATION BEFORE 1877 WAS THAT OF
BACHELOR OF ARTS.

GRADUATES.

1836

Thomas F. Cock, *M.D.*, LL.D.
Joseph Walton

1837

*William C. Longstreth, * 1881
*David C. Murray, * 1885
Lindley Murray
*Benjamin V. Marsh, * 1882
*Joseph L. Pennock, * 1870
Robert B. Parsons
*Charles L. Sharpless, * 1882
*Lloyd P. Smith, A.M., * 1886
*B. Wyatt Wistar, * 1869

1838

*James V. Emlen, *M.D.*, * 1880
*John Elliott, * 1893

1839

*Frederic Collins, * 1892
Thomas P. Cope
Henry Hartshorne, *M.D.*, A.M., LL.D.
*Nereus Mendenhall, *M.D.*, * 1893
Richard Randolph, Jr., *M.D.*
*Charles Taber, * 1887

1840

*Joseph Howell, * 1889
Anthony M. Kimber
*Henry H. G. Sharpless, * 1870
*John R. Winslow, *M.D.*, * 1866

1841

*Richard H. Lawrence, * 1847
*James P. Perot, * 1872
*Elias A. White, * 1866

1842

Robert Bowne
Richard Cadbury
*William S. Hilles, * 1876
*Thomas Kimber, Jr., LL.D., * 1890
*James J. Levick, *M.D.*, A.M., * 1893
Edmund Rodman, A.M.
Thomas R. Rodman, *A.B.*
Benjamin R. Smith
Augustus Taber
Caleb Winslow, *M.D.*

1843

Robert B. Howland
Francis White
*William D. Stroud, *M.D.*, * 1883

1844

Evan T. Ellis
Robert B. Haines
Isaac Hartshorne

1845

*Edmund A. Crenshaw, * 1894
*Robert Pearsall, * 1849

1849

Albert K. Smiley, A.M.
Alfred H. Smiley, A.M.

1851

Joseph L. Bailey
Philip C. Garrett
Thomas J. Levick
Franklin E. Paige, A.M.

Zaccheus Test, *M.D.*, A.M.
James C. Thomas, *M.D.*, A.M.
Richard Wood

1852

Dougan Clark, *M.D.*
Lewis N. Hopkins
William L. Kinsman
William E. Newhall
James Whitall

1853

William B. Morgan, A.M.
William H. Pancoast, *M.D.*, A.M.

1854

Frederick Arthur, Jr.
John W. Cadbury
John B. Garrett
David Scull, Jr.

1855

*Samuel Bettie, * 1859
John R. Hubbard, A.M.

1856

Bartholomew W. Beesley
Joel Cadbury, Jr.
Jonathan J. Comfort, *M.D.*
*James M. Walton, * 1874
Edward R. Wood, A.M.

1857

Jesse S. Cheney, A.M.
*Cyrus Mendenhall, * 1858
Stephen Wood

1858

*Thomas H. Burgess, * 1893
Thomas Clark
Daniel W. Hunt
*Samuel T. Satterthwaite, * 1865
William G. Tyler
Thomas Wistar, A.M., *M.D.*
Ellis H. Yarnall, *L.L.B.*

1859

*Richard W. Chase, * 1865
James R. Magee
*Richard C. Paxson, * 1864
*Edward Rhoads, *M.D.*, * 1871

Edward C. Sampson
*George Sampson, * 1872
Abram Sharples, *M.D.*
Benjamin H. Smith

1860

*Lindley M. Clark, * 1861
*William B. Corbit, *M.D.*, * 1882
*William M. Corlies, * 1881
Cyrus Lindley
Theodore H. Morris
Frederick W. Morris
Richard Pancoast
John W. Pinkham, *M.D.*
Francis Richardson
Clement L. Smith, A.M., *L.L.D.*
James Tyson, *M.D.*, A.M.
Silas A. Underhill, *L.L.B.*

1861

Edward Bettie, Jr.
*Henry Bettie, * 1886
*Charles Bettie, * 1883
William B. Broomall
Charles H. Jones
*Thomas W. Lamb, A.M., *M.D.*, * 1878
William N. Potts
Jehu H. Stuart, A.M., *M.D.*
John C. Thomas

1862

Henry T. Coates, A.M.
*Samuel A. Hadley, * 1864
Horace G. Lippincott
George B. Mellor
Horace Williams, *M.D.*
Isaac F. Wood

1863

Thomas J. Battey, A.M.
*George M. Coates, Jr., A.M., * 1894
William M. Coates
*Richard T. Jones, * 1869
William H. Morris
Joseph G. Pinkham, *M.D.*, A.M.

1864

*Franklin Angell, A.M., * 1882
*William Ashbridge, *M.D.*, * 1884
Edward H. Coates
Howard M. Cooper, A.M.
Albin Garrett

Morris Longstreth, *A.B., M.D., A.M.*
 Albert Pancoast
 Charles Roberts

*E. Pope Sampson, * 1893

*Edward L. Scull, * 1884

*Randolph Wood, * 1876

1865

John R. Bringhurst
 *Edward T. Brown, * 1892
 James A. Chase
 Joseph M. Downing
 Arthur Haviland
 *David H. Nichols, * 1865
 Henry W. Sharpless
 *George Smith, Jr., * 1872
 Robert B. Taber, A.M.
 Allen C. Thomas, A.M.
 Benjamin A. Vail
 Caleb Cresson Wistar

1866

A. Marshall Elliott, A.M.
 Benjamin E. Valentine, *L.L.B.*

1867

*John Ashbridge, * 1881
 George Ashbridge, A.M., *L.L.B.*
 William P. Clark, A.M., *L.L.B.*
 Samuel C. Collins, A.M.
 Nathaniel B. Crenshaw
 Charles H. Darlington, A.M.
 *William T. Dorsey, *M.D.*, * 1870
 B. Franklin Eshleman
 Richard M. Jones, A.M., *L.L.D.*
 *Charles W. Sharpless, * 1889.
 Walter Wood

1868

Edward H. Cook
 *Alexis T. Cope, * 1883
 Benjamin C. Satterthwaite
 Louis Starr, M.D.
 S. Finley Tomlinson
 Joseph H. Wills, A.M., *M.D.*

1869

Johns H. Congdon
 Henry A. Cope, A.M.
 Ludovick Estes, *A.M.*
 *Henry Evaul, A.M., * 1877
 *William B. Kaighn, * 1876
 Pendleton King, A.M.

William H. Randolph
 Edward B. Taylor, *M.C.E.*
 William S. Taylor
 James G. Whitlock
 Walter Wood
 Henry Wood, *Ph.D.*

1870

J. Stuart Brown
 John E. Carey
 Alford G. Coale
 Howard Comfort
 T. Allen Hilles
 William H. Hubbard, *M.D.*
 *Thomas K. Longstreth, A.M., * 1883
 Oliver G. Owen, A.M.
 Charles E. Pratt, A.M.
 David F. Rose
 *John D. Steele, * 1886
 Charles Wood, A.M.
 Stuart Wood, *Ph.D.*

1871

Henry G. Brown
 *William P. Evans, * 1893
 John S. Garrigues
 Reuben Haines, A.M.
 William H. Haines
 Joseph Hartshorne
 Jesse F. Hoskins
 Walter T. Moore
 Ellis B. Reeves
 Alfred R. Roberts, *C.E.*
 Charles S. Taylor
 Edward D. Thurston
 Randolph Winslow, *M.D.*, A.M.

1872

Richard Ashbridge, *M.D.*
 Richard T. Cadbury, *A.B., A.M.*
 James Carey, Jr., *L.L.B.*
 Thomas S. Downing, Jr.
 Walter Erben
 Thomas Roland Estes
 John E. Forsythe
 William H. Gibbons, A.M.
 Francis B. Gummere, *A.B., A.M.*,
Ph.D.
 Casper William Haines, A.M., *C.E.*
 Abram Francis Huston
 *Marmaduke Cope Kimber, A.M., * 1878
 William M. Longstreth
 Richard H. Thomas, *M.D.*

1873

James C. Comfort
 Thomas P. Cope, Jr.
 George W. Emlen
 Joseph M. Fox
 Henry C. Haines
 Benjamin H. Lowry, A.M.
 Alden Sampson, A.M., *A.B.*, *A.M.*
 *Julius L. Tomlinson, A.M., * 1890

1874

Edward P. Allinson, A.M.
 John G. Bullock
 James Emlen
 Charles R. Hartshorne, *LL.B.*
 Samuel E. Hilles
 John B. Jones
 *Mahlon Kirkbride, * 1889
 Theophilus P. Price
 James B. Thompson
 Joseph Trotter

1875

Edward K. Bispham
 Alonzo Brown, A.M.
 J. Franklin Davis, A.M.
 Charles E. Haines
 William Hunt, Jr.
 Charles L. Huston
 Harold P. Newlin
 Walter W. Pharo
 Charles E. Tebbetts
 Miles White, Jr.

1876

Francis G. Allinson, A.M., *Ph.D.*
 David S. Bispham
 Reuben Colton
 Henry W. Dudley
 Seth K. Gifford, A.M.
 L. Lyndon Hobbs, A.M.
 Richard H. Holme
 *Thomas William Kimber, * 1885
 Charles A. Longstreth
 J. Whitall Nicholson
 Percival Roberts, Jr.
 Frank H. Taylor
 Howard C. Taylor
 *Lewis A. Taylor, 1881

1877

A.B.

Isaac W. Anderson
 Frederic L. Baily

Isaac Forsythe
 James D. Krider
 George D. Mercer, *LL.M.*, *J.C.D.*
 Wilson Townsend

S.B.

William F. Smith

1878

A.B.

Henry Baily, A.M.
 Albert L. Baily
 Francis K. Carey, *LL.B.*, A.M.
 Edward T. Comfort
 Charles S. Crosman, *LL.B.*
 Samuel H. Hill
 Lindley M. H. Reynolds
 Daniel Smiley, Jr.
 Henry L. Taylor, A.M., *M.D.*
 John M. W. Thomas
 George W. White

S.B.

Jonathan Eldridge
 Edward Forsythe
 Cyrus P. Frazier, *A.B.*
 Robert B. Haines, Jr.
 Henry N. Stokes, *Ph.D.*

1879

A.B.

Samuel Bispham, Jr.
 Edward Gibbons
 John H. Gifford, *M.D.*
 Francis Henderson, *LL.B.*
 William C. Lowry
 John B. Newkirk
 John E. Sheppard, Jr., *M.D.*

1880

A.B.

Charles F. Brédé, A.M.
 Charles E. Cox
 Josiah P. Edwards
 James L. Lynch
 Samuel Mason, Jr.
 William F. Perry
 Joseph Rhoads, Jr., A.M.

S.B.

William Bishop
 Alexander P. Corbit
 Charles E. Gause, Jr.
 Edward M. Jones.

1881

A.B.

William A. Blair, *A.M.*
 A. Morris Carey
 Levi T. Edwards, *A.M.*
 Edward Y. Hartshorne
 Isaac T. Johnson, *A.M.*
 Edwin O. Kennard
 Jesse H. Moore
 William E. Page
 Walter F. Price, *A.M.*, *A.M.*
 Thomas N. Winslow
 John C. Winston

S.B.

Walter Brinton
 William H. Collins, *A.M.*
 Joseph H. Cook
 David H. Forsythe
 Albanus L. Smith

1882

A.B.

George A. Barton, *A.M.*, *A.M.*, *Ph.D.*
 Isaac M. Cox
 Richard B. Hazard
 Wilmot R. Jones
 *Wilmer P. Leeds, * 1885
 J. Henley Morgan
 Edward Randolph

S.B.

John E. Coffin
 Daniel Corbit
 George L. Crosman
 Frederic D. Jones
 T. Chalkley Palmer
 Lindley M. Winston

1883

A.B.

John Blanchard, *LL.B.*
 Frank E. Briggs
 George H. Evans
 Francis B. Stuart
 Bond V. Thomas
 Thos. K. Worthington, *LL.B.*, *Ph.D.*

S.B.

William L. Bailly
 Stephen W. Collins, *LL.B.*

D. William Edwards
 William E. Scull

*Samuel B. Shoemaker, *M.D.*, *1893

John D. Spruance
 W. Alpheus White
 Charles H. Whitney
 Louis B. Whitney

1884

A.B.

John Henry Allen, *A.M.*
 Orren William Bates
 Thomas Herbert Chase
 William J. Haines
 Arthur D. Hall
 Charles R. Jacob
 Alfred Percival Smith, *LL.B.*

S.B.

Louis T. Hill
 Walter L. Moore
 George Vaux, Jr., *LL.B.*

L.B.

Francis A. White

1885

A.B.

Samuel Bettle
 Enos L. Doan
 William T. Ferris
 William S. Hilles
 William T. Hussey
 Arthur W. Jones, *A.M.*
 Rufus M. Jones, *A.M.*
 Joseph L. Markley, *A.M.*, *A.M.*, *Ph.D.*
 Marriott C. Morris
 Augustus T. Murray, *Ph.D.*
 Augustus H. Reeve
 William F. Reeve
 Isaac Sutton, *A.M.*, *A.M.*
 Elias H. White, *LL.B.*
 William F. Wickersham, *A.M.*

S.B.

Charles W. Bailly
 John J. Blair
 Thomas Newlin, *A.M.*
 Theodore W. Richards, *A.M.*, *Ph.D.*
 *Matthew T. Wilson, *1891

1886

A.B.

Jonathan Dickinson, Jr.
Alexander H. Scott
Horace E. Smith
Edward D. Wadsworth, *LL.B.*

S.B.

*Thomas W. Betts, * 1893

Guy R. Johnson
William S. McFarland
*Israel Morris, Jr., * 1891
William P. Morris
Alfred M. Underhill, Jr.
Wilfred W. White

1887

A.B.

Jay Howe Adams, *M.D.*
Edward B. Cassatt
William H. Futrell, *LL.B.*
Alfred C. Garrett, *A.B., A.M., Ph.D.*
Henry H. Goddard, A. M.
Willis Hatfield Hazard, *A.M., Ph.D.*
Barker Newhall, A. M., *Ph.D.*
Jesse E. Philips, Jr., A. M.
Henry W. Stokes
Frederic H. Strawbridge
Richard J. White
George B. Wood
William C. Wood

S.B.

*Arthur H. Bailly, * 1889

Charles H. Bedell
Allen B. Clement, A.M.
Horace Y. Evans, Jr.
Hugh Lesley
*William W. Trimble, * 1891

B.E.

P. Hollingsworth Morris

1888

A.B.

E. Morris Cox
Howell S. England, A.M.
Allison W. Slocum, A. M., *Ph.D.*
Martin B. Stubbs, A. M.

S.B.

Charles H. Battey
John C. Corbit, Jr.
Morris E. Leeds
William Draper Lewis, *LL.B., Ph.D.*
Henry V. Gummere, A.M., *A.M.*
Francis C. Hartshorne, *LL.B.*
Joseph T. Hilles
George B. Roberts
Joseph W. Sharp

B.E.

Lawrence P. Beidelman
Joseph E. Johnson, Jr., M.E.
Frederick W. Morris, Jr.
Richard J. Morris

1889

A.B.

Robert C. Banes
Thomas F. Branson, *M.D.*
Charles H. Burr, Jr., A.M., *LL.B.*
Thomas Evans
Warner H. Fite
Warren C. Goodwin
Victor M. Haughton
Franklin B. Kirkbride
Daniel C. Lewis
Lawrence J. Morris
William F. Overman
Frank W. Peirson, A.M.
Samuel Prioleau Ravenel, Jr., *LL.B.*
Walter George Reade
Lindley M. Stevens, A.M.
John Stoddell Stokes
*Layton W. Todhunter, * 1889
Frederick N. Vail, A.M.
Gilbert C. Wood

S.B.

William R. Dunton, A.M., *M.D.*
Arthur N. Leeds, A.M.
J. Henry Painter
David J. Reinhardt
Frank E. Thompson, A.M.

B.E.

Herbert Morris

1890

A.B.

Edward M. Angell, *LL.B.*
James Stuart Auchincloss

William G. Audenried, Jr.
 Henry R. Bringham, Jr.
 Charles T. Cottrell, A.M.
 Guy H. Davies
 Robert E. Fox
 Henry L. Gilbert, A.M.
 William G. Jenkins
 Thomas S. Kirkbride, *M.D.*
 Jonathan M. Steere, A.M.

S.B.

Thomas Amory Coffin
 Percy S. Darlington
 William M. Guilford, Jr.
 John N. Guss
 Edwin J. Haley, A.M.
 Robert R. Tatnall, A.M.
 Dilworth P. Hibberd, A.M.
 Alfred C. Tevis

B.E.

John F. Taylor Lewis
 Edward R. Longstreth
 William Percy Simpson
 Ernest Foster Walton

1891

A.B.

Harry Alger
 David H. Blair
 Henry A. Todd

S.B.

William W. Handy
 Arthur Hoopes
 John Wetherill Hutton, A.M.
 David L. Mekeel, M.E.
 John Stokes Morris, A.M.
 George Thomas, 3d

1892

A.B.

Richard Brinton
 I. Harvey Brumbaugh
 Benjamin Cadbury, A. M.
 Joseph Henry Dennis
 Warren H. Detwiler
 Rufus Hacker Hall
 Walter Morris Hart, A.M.
 Gilbert Joseph Palen
 Ralph Warren Stone
 W. Nelson Loflin West
 Stanley Rhoads Yarnall, A.M.

S.B.

Augustine W. Blair
 Egbert Snell Cary
 Minturn Post Collins
 Charles Gilpin Cook, A.M.
 William Pearson Jenks
 Franklin McAllister
 John Wallingford Muir
 William Hopkins Nicholson, Jr.
 William Ellis Shipley
 Joseph Remington Wood

1893

A.B.

Leslie Adelbert Bailey, A.M.
 *John Farnum Brown, * 1894
 Wilbur Albert Estes
 Walter Winchip Haviland
 Clarence Gilbert Hoag, *A.B.*
 Carrol Brinton Jacobs
 George Lindley Jones
 Charles Osborne
 Charles James Rhoads
 Eugene M. Westcott
 *Franklin Whittall, * 1894
 Gifford King Wright

S.B.

Francis F. Davis, A.M.
 Arthur Villiers Morton
 John Mickle Okie
 Edward Rhoads
 John Roberts
 Barton Sensenig
 William Sansom Vaux, Jr.
 Edward Woolman

1894

A.B.

George A. Beyerle
 Charles Collins
 William Wistar Comfort
 John Allen De Cou
 Clifford Bailey Farr
 John Paul Haughton
 James Edward Hughes
 Louis Jaquette Palmer
 Frank Clayton Rex
 Frederick Pearce Ristine
 Francis Joseph Stokes
 David Shearman Taber, Jr.
 Parker Shortridge Williams.

S.B.	Kane Stovell Greene
J. Henry Bartlett	Anson Burlingame Harvey
Oscar Marshall Chase	Samuel Wheeler Morris
Henry Shoemaker Conard	Edward Entwisle Quimby
George Brookhouse Dean	Henry Wismer Scarborough
	William Justus Strawbridge

Whole number of graduates, 541.

The following graduate students have received Advanced Degrees, not having been undergraduates at Haverford :

1890.

William B. Eaton, A.B., Wesleyan, 1889, A.M.
 Charles L. Michener, A.B., Penn, 1884, A.M.
 Charles E. Pritchard, A.B., Earlham, 1889, A.M.
 William C. Sayrs, A.B., Wilmington, 1889, A.M.
 Charles E. Terrell, S.B., Wilmington, 1888, A. M.
 Charles H. Thurber, Ph.B., Cornell, 1886, A.M.
 Robert W. Rogers, A.B., Johns Hopkins, 1887, Ph.D.

1891.

Lawrence M. Byers, A.B., Penn, 1890, A.M.
 William H. Carroll, A.B., Wilmington, 1890, A.M.
 Myron F. Hill, A.B., Harvard, 1890, A.M.
 Lucian M. Robinson, A.B., Harvard, 1882, A.M.

1892.

Elmer H. Gifford, S.B., Penn, 1888, A.M.
 Byron Charles Hubbard, S.B., Earlham, 1891, A.M.

1893.

Irving Culver Johnson, S.B., Penn, 1892, A.M.
 Leonard Charles Van Noppen, A.B., Guilford, 1890, B.L., Univ.
 N. C., 1892, A.M.

1894.

Franklin A. Dakin, A.B., Harvard, 1882, A.M.
 William W. Hastings, A.B. and A.M., Maryville, 1886 and 1892, A.M.
 Mahlon Z. Kirk, S.B., Penn, 1893, A.M.
 Arthur R. Spaid, A.B., Wilmington, 1893, A.M.
 Edwin Mood Wilson, A. B., Guilford, 1892; A.B., Univ. N. C.,
 1893, A.M.

Honorary Degrees.

1858	1880
Hugh D. Vail, A.M.	*Thomas Chase, LTT.D., * 1892
1859	Thomas Hughes, LL.D.
*Joseph W. Aldrich, A.M., * 1865	1882
1860	Henry T. Coates, A.M.
*John G. Whittier, A.M., * 1892	1883
1864	Thomas F. Cock, LL.D.
Edward D. Cope, A.M.	James Wood, A.M.
1867	Henry N. Hoxie, A. M.
Joseph Moore, A.M.	1884
1872	*Joseph Parrish, A.M., * 1893
William Jacobs, A.M.	Elijah Cook, A.M.
1875	1885
*Samuel Alsop, Jr., A.M., * 1888	*Julius L. Tomlinson, A.M., * 1890
1876	Robert Howland Chase, A.M.
*Pliny E. Chase, LL.D., * 1886	1886
William H. Pancoast, A.M.	Edward H. Magill, LL.D.
1877	1887
John J. Thomas, A.M.	*Thomas Kimber, LTT.D., * 1890
1879	1888
Richard M. Jones, A.M.	Clement L. Smith, LL.D.
Ellis Yarnall, A.M.	1890
	Joseph John Mills, LL.D.
	1891
	Richard M. Jones, LL.D.

HOLDERS OF THE HAVERFORD FELLOWSHIP.

1889-90,	CHARLES H. BURR.
	FRANK E. THOMPSON.
1890-91,	DILWORTH P. HIBBERD.
1891-92,	DAVID LANE MEKEEL.
1892-93,	STANLEY RHOADS YARNALL.
1893-94,	FRANCIS F. DAVIS.
1894-95,	HENRY S. CONARD.

THE FACULTY

desires to place a copy of the Annual Catalogue in the hands of every alumnus and member of the corporation. It is requested that all omissions that become known be reported to the Secretary of the College.

HAVERFORD COLLEGE STUDIES.

- No. 1.—The Library of the Convent of the Holy Sepulchre at Jerusalem ; J. Rendel Harris.
Work of Haverford College Observatory ; F. P. Leavenworth.
On the Geometry of a Nodal Circular Cubic ; Frank Morley.
On the Period of Rotation of the Sun ; Henry Crew.
On the Symbolic Use of the Colors Black and White in Germanic Tradition ; Francis B. Gummere.
- No. 2.—The Rest of the Words of Baruch ; J. Rendel Harris.
Some Esarhaddon Inscriptions ; Robert W. Rogers.
- No. 3.—The Passion of Perpetua ; J. Rendel Harris and Seth K. Gifford.
On Some Properties of the Triangle ; Frank Morley.
- No. 4.—On the Numerical Characteristics of a Cubic Curve ; Charlotte Angas Scott.
On the Caustic of the Epicycloid ; Frank Morley.
Sun-Spot Observations ; H. V. Gummere and F. P. Leavenworth.
On a New Manuscripts of the Four Gospels ; W. C. Braithwaite.
A Catalogue of Manuscript (chiefly Oriental) in the Library of Haverford College ; Robert W. Rogers.
The Passion of Perpetua ; translated by Seth K. Gifford.
Specimens of Uncial Lectionaries from Mount Sinai ; J. Rendel Harris.
- No. 5.—The Diatessaron of Tatian, a Preliminary Study ; J. Rendel Harris.
- Nos. 6 and 7.—The Apology of Aristides ; J. Rendel Harris.
- No. 8.—The Codex Bezae ; J. Rendel Harris.
- No. 9.—The Codex Sangallensis ; J. Rendel Harris.
Unpublished Inscriptions of Esarhaddon ; Robert W. Rogers.
- No. 10.—Some Interesting Inscriptions ; J. Rendel Harris.
Stellar Parallax ; F. P. Leavenworth.
Conform Representation by means of the ϕ -Function ; Frank Morley.
- No. 11.—Municipal Government in England ; Isaac Sharpless.
Myth and Allegory ; Francis B. Gummere.
Professor Ewing's Theory of Magnetism ; Arthur Hoopes.
New Method of Obtaining a Constant Temperature ; Henry Crew.
Errors from the Use of Decimals ; Ernest W. Brown.
Parallax of Delta Herculis ; F. P. Leavenworth.
Double Star and Sun-Spot Observations ; F. P. Leavenworth and W. H. Collins.
- No. 12.—The Familists ; Allen C. Thomas.
On the Reading of " $\tau\delta\ \pi\acute{\alpha}\sigma\chi\alpha$ " in John vi, 4 ; George A. Barton.
Our Lord's Quotation from the First Book of Maccabees ; Albert J. Edmunds.
Parallax of θ Arg. 14320, and of δ Equilei ; Francis P. Leavenworth.
Double Star Observations ; William H. Collins.
Observations of Variable Stars ; George L. Jones.
Observations of the Partial Eclipse of the Sun, October 20th, 1892 ; Williams H. Collins.

PRICE, ONE DOLLAR PER NUMBER.

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For copies address

The Secretary of Haverford College,

Haverford P. O., Pa.



